TINO AKORANGA

A research informed guide to exceptional teaching and learning.

2024 Edition

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CONTENTS PAGE

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INTRODUCTION AND OVERVIEW

"Mā te huruhuru ka rere te manu"

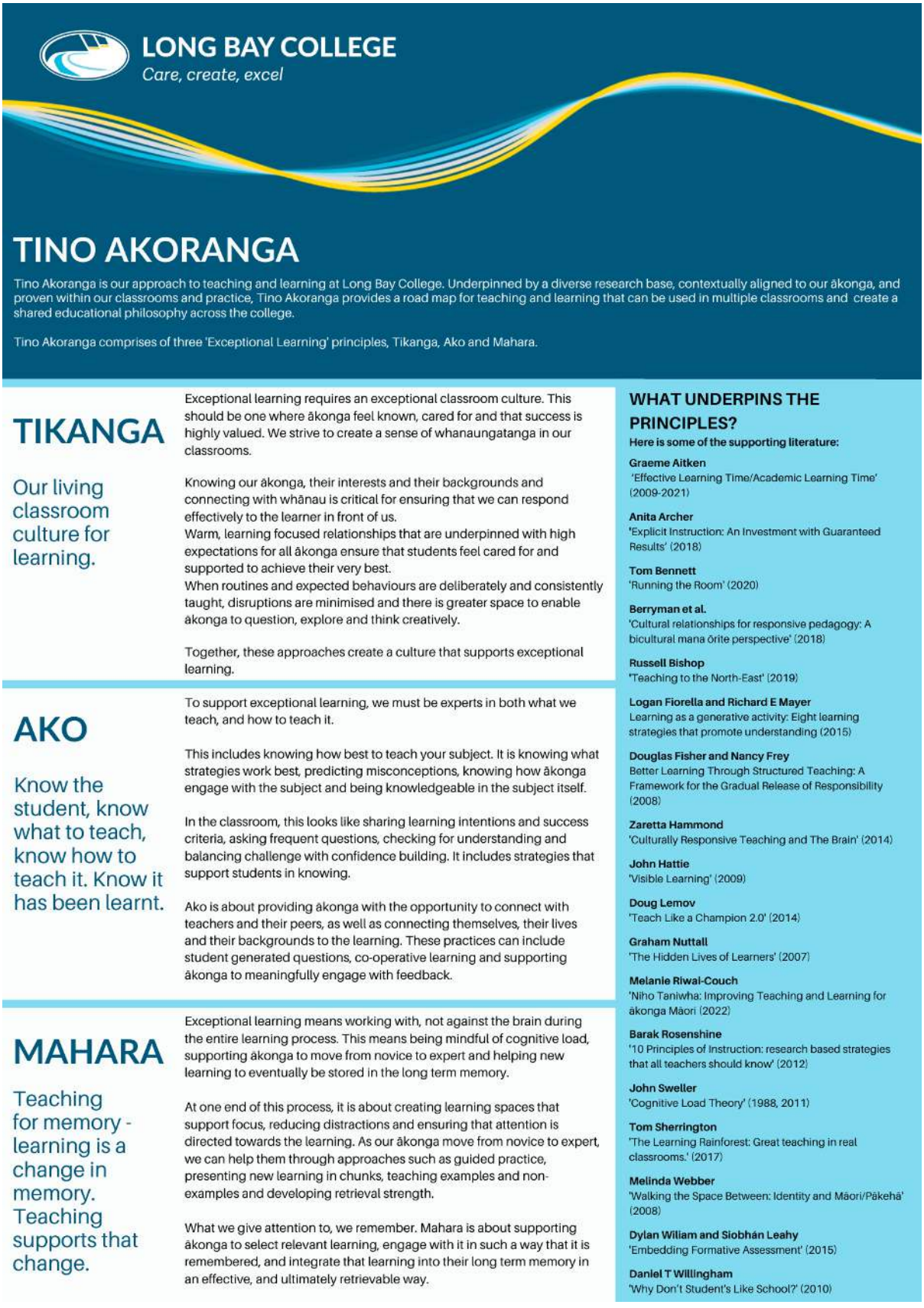
"Adorn the bird with feathers so it can fly"

In 2019 Long Bay College reviewed its approach to teaching and learning. With a view to considering research-based approaches and developments in culturally responsive practice, relational pedagogy, and cognitive science; our goal was to support teaching and learning in being exceptional. That involved the consideration of educational approaches from across the world through an Aotearoa New Zealand lens and led to the development of our Tino Akoranga approach.

Tino Akoranga:

- Is mindful of the needs of the individual learner and the specialist subject.
- Seeks to secure knowledge and understanding of the skills and concepts taught to all learners.
- Considers high quality teaching practice and whanaungatanga.
- Is culturally responsive, considering the learner, their background and their whānau.
- Seeks to foster cultural competency.
- Seeks to secure learning and is mindful of not overloading learners.
- Supports a professional learning culture grounded in "improving not proving".
- Supports personal excellence for all.
- Is a consistent focus for professional learning at a whole school, faculty, and individual level over the course of years.
- Has a shared language and shared approach that supports the classroom teacher, faculty, and college in adapting their individual and collective practice to the needs of our learners.

TIKANGA, AKO AND MAHARA – THE PRINCIPLES OF TINO AKORANGA



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TINO AKORANGA

Tino Akoranga is our approach to teaching and learning at Long Bay College. Underpinned by a diverse research base, contextually aligned to our ākonga, and proven within our classrooms and practice, Tino Akoranga provides a road map for teaching and learning that can be used in multiple classrooms and create a shared educational philosophy across the college.

Tino Akoranga comprises of three 'Exceptional Learning' principles, Tikanga, Ako and Mahara.

TIKANGA

Our living classroom culture for learning.

Exceptional learning requires an exceptional classroom culture. This should be one where ākonga feel known, cared for and that success is highly valued. We strive to create a sense of whanaungatanga in our classrooms.

Knowing our ākonga, their interests and their backgrounds and connecting with whānau is critical for ensuring that we can respond effectively to the learner in front of us.
Warm, learning focused relationships that are underpinned with high expectations for all ākonga ensure that students feel cared for and supported to achieve their very best.
When routines and expected behaviours are deliberately and consistently taught, disruptions are minimised and there is greater space to enable ākonga to question, explore and think creatively.

Together, these approaches create a culture that supports exceptional learning.

AKO

Know the student, know what to teach, know how to teach it. Know it has been learnt.

To support exceptional learning, we must be experts in both what we teach, and how to teach it.

This includes knowing how best to teach your subject. It is knowing what strategies work best, predicting misconceptions, knowing how ākonga engage with the subject and being knowledgeable in the subject itself.

In the classroom, this looks like sharing learning intentions and success criteria, asking frequent questions, checking for understanding and balancing challenge with confidence building. It includes strategies that support students in knowing.

Ako is about providing ākonga with the opportunity to connect with teachers and their peers, as well as connecting themselves, their lives and their backgrounds to the learning. These practices can include student generated questions, co-operative learning and supporting ākonga to meaningfully engage with feedback.

MAHARA

Teaching for memory - learning is a change in memory. Teaching supports that change.

Exceptional learning means working with, not against the brain during the entire learning process. This means being mindful of cognitive load, supporting ākonga to move from novice to expert and helping new learning to eventually be stored in the long term memory.

At one end of this process, it is about creating learning spaces that support focus, reducing distractions and ensuring that attention is directed towards the learning. As our ākonga move from novice to expert, we can help them through approaches such as guided practice, presenting new learning in chunks, teaching examples and non-examples and developing retrieval strength.

What we give attention to, we remember. Mahara is about supporting ākonga to select relevant learning, engage with it in such a way that it is remembered, and integrate that learning into their long term memory in an effective, and ultimately retrievable way.

WHAT UNDERPINS THE PRINCIPLES?

Here is some of the supporting literature:

Graeme Aitken
'Effective Learning Time/Academic Learning Time' (2009-2021)

Anita Archer
'Explicit Instruction: An Investment with Guaranteed Results' (2018)

Tom Bennett
'Running the Room' (2020)

Berryman et al.
'Cultural relationships for responsive pedagogy: A bicultural mana ōrite perspective' (2018)

Russell Bishop
'Teaching to the North-East' (2019)

Logan Fiorella and Richard E Mayer
Learning as a generative activity: Eight learning strategies that promote understanding (2015)

Douglas Fisher and Nancy Frey
Better Learning Through Structured Teaching: A Framework for the Gradual Release of Responsibility (2008)

Zaretta Hammond
'Culturally Responsive Teaching and The Brain' (2014)

John Hattie
'Visible Learning' (2009)

Doug Lemov
'Teach Like a Champion 2.0' (2014)

Graham Nuttall
'The Hidden Lives of Learners' (2007)

Melanie Riwai-Couch
'Niho Taniwha: Improving Teaching and Learning for ākonga Māori (2022)

Barak Rosenshine
'10 Principles of Instruction: research based strategies that all teachers should know' (2012)

John Sweller
'Cognitive Load Theory' (1988, 2011)

Tom Sherrington
'The Learning Rainforest: Great teaching in real classrooms.' (2017)

Melinda Webber
'Walking the Space Between: Identity and Māori/Pākehā' (2008)

Dylan Wiliam and Siobhán Leahy
'Embedding Formative Assessment' (2015)

Daniel T Willingham
'Why Don't Student's Like School?' (2010)

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EFFECTIVE LEARNING TIME AND TEACHING AS INQUIRY

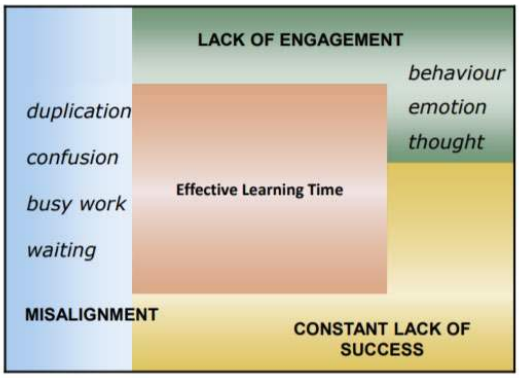
Tikanga, Ako and Mahara are our principles of exceptional learning. These principles create a shared educational philosophy across the college and provide an approach to teaching and learning that can be used in multiple classrooms.

Tikanga	Ako	Mahara
Our living classroom culture for learning.	Know the learner, know what to teach, know how to teach it. Know it has been learnt.	Teaching for memory - learning is a change in memory. Teaching supports that change.

Effective Learning Time

At the base of these principles is Professor Emeritus Graeme Aitken's work on 'Effective Learning Time'. This model is about seeking to maximise learning time in the classroom by reducing misalignment and a lack of learner success and increasing engagement. Graeme Aitken spoke to our staff in March 2021, introducing this model and linking it to our Principles of Exceptional Learning.

In his presentation to staff, Aitken spoke about how "the enemy is thinking there is one way of doing things". This resonated and continues to underpin our approach when considering both how we can maximise 'Effective Learning Time" in our classes, and in our approach to supporting teachers to unpack and use our 'Principles of Exceptional Learning'.



Graeme Aitken, 2009-2021

Teaching as Inquiry

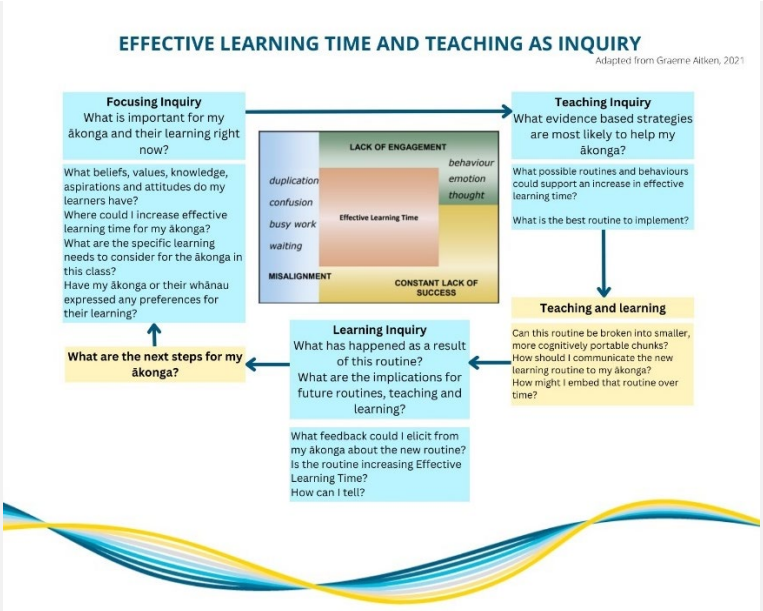
Teaching as inquiry (TAI) is a process that encourages teachers to change their practice in order to enhance success for students. It involves inquiry into the impact of teaching and the teaching–learning relationship. TAI is "not a 'project', an 'initiative' or an 'innovation' but a professional way of being."

Timperley, Kaser, Halbert, 2014

Teaching as Inquiry has four parts:

Focusing inquiry - Teachers identify the outcomes they want their students to achieve. They consider how their students are doing in relation to those outcomes, and they ask what their students need to learn next in order to achieve them.

Teaching inquiry - Teachers select teaching strategies that will support their students to achieve identified outcomes. This involves asking questions about how well current strategies are working and whether others might be more successful.



Teaching and learning - Putting new strategies into action.

Learning inquiry - Teachers monitor their students' progress towards the identified outcomes and reflect on what this tells them. Teachers use this new information to decide what to do next to ensure continued improvement in student achievement and in their own practice.

New Zealand Curriculum TKI (2020)

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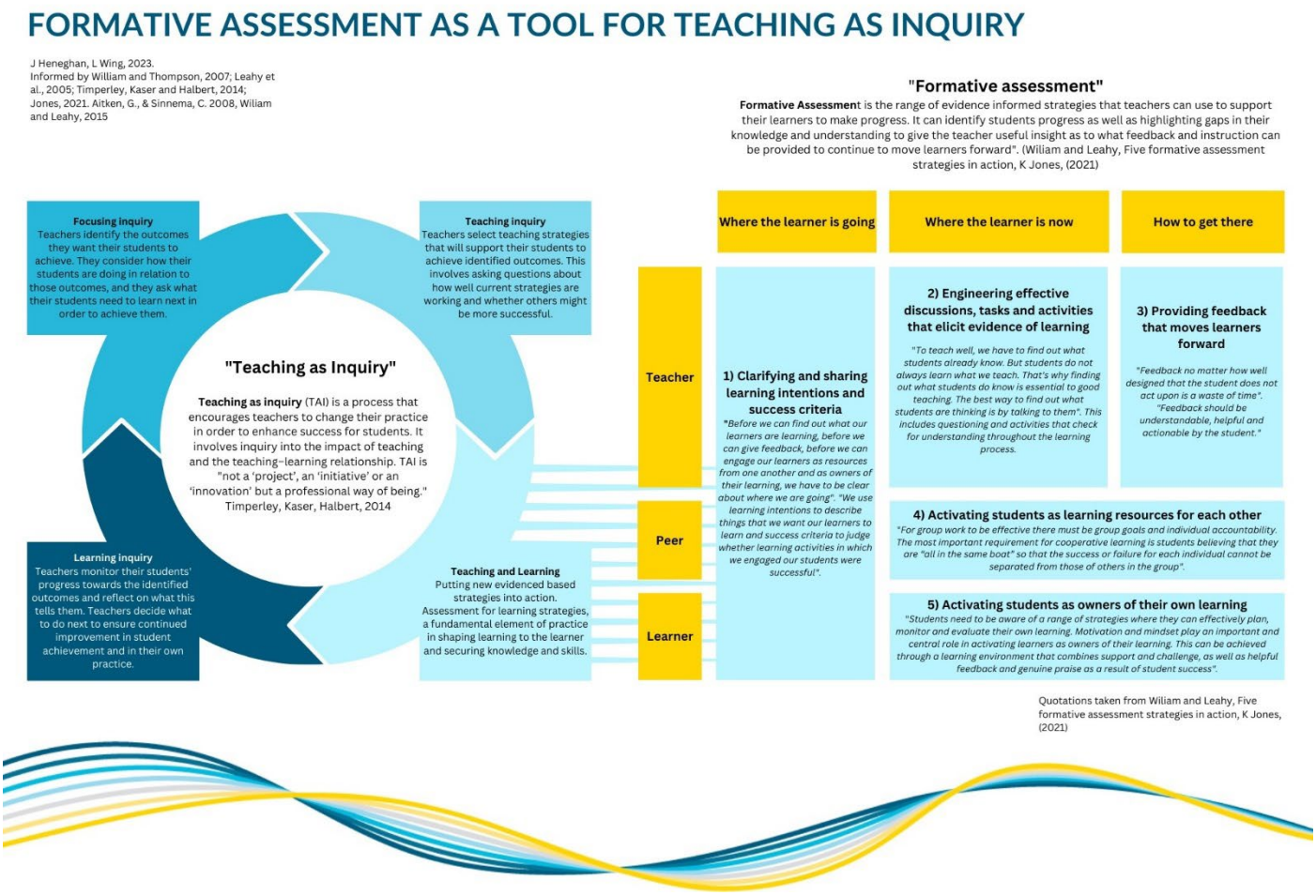
FORMATIVE ASSESSMENT AS A TOOL FOR TEACHING AS INQUIRY

Assessment is a fundamental and vital part of curriculum. It can, and should take a range of forms, and be used at a range of stages within a teaching and learning cycle. Formative Assessment, carried out during a course of learning can inform teachers and learners about progress made, and next steps for learning.

“Teaching as inquiry” is described by Timperley, Hauser and Halbert as “a way of professional being”. In practice, it cultivates the inquiring and reflective teacher. For those reasons (and more) it implicitly and explicitly sits across several of our practising teacher criteria in New Zealand. The adaptation of teaching to learning and to the learner, a fundamental of practice that relies on a toolkit of formative assessment strategies. Part of the drive underpinning the Tino Akoranga initiative at Long Bay College is the building of that toolkit. The below graphic considering both “Teaching as inquiry” and five key strategies supporting formative assessment that support an inquiring mindset.



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ADAPTIVE ROUTINES

Routines are a series of explicitly taught behaviours for use in the classroom. These routines, when used consistently, support behaviour and learning. Tikanga, Ako and Mahara provide the pedagogical approach for us as a college. The routines we use bring the principles to life in our classrooms.

Routines provide:

- A consistent approach for learners and teachers.
- Lessened cognitive load for learners and teachers.
- Increased learning time and reduced misalignment.
- Supports that develop the habits of the class into becoming the character of the class.

Central to the ability to develop teaching and learning is the idea of the adaptive routine development as result of teaching as inquiry. The intended outcome, that any routine supporting effective teaching and learning can be developed and tweaked to best meet the needs of learners and contexts. It is important to note that adaptive routine development is universal across all aspects of Tino Akoranga.

A further support for the development of adaptive routines at the college is the: “Adaptive routines wheel”. The resource considering specific elements directly relating to the development and tweaking of teaching and learning approaches to better meet the needs of our learners.

Hughes, M, Lacey, C. and Wing, L. (2021, updated 2023) ‘Adaptive Routines Wheel’. Diagram, unpublished.

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MANA ŌRITE

"Teacher action lies at the heart of countering inequity for Māori" - Russell Bishop, 2009

Mana Ōrite is best understood as a metaphor. At its core it is about:

- Relationships
- Treating others how we would like to be treated.
- Directly challenging our unconscious biases.
- Creating a foundation for being responsive.
- Using what our learners and their whānau bring to the classroom in a real and practical way.

	Effective Mana Ōrite relationships could look like…
Wānanga	Using a wide range of information, including what you know and are still learning about the cultural context of your learner to understand what they have in their "cultural toolkit" (Bruner, 1996) as the basis for determining their next steps. A "one size fits one" approach for personalising learning.
Ako	Taking reciprocal responsibility to learn from and teach each other. Ensuring opportunities for learners to question and learn from one and other as well. Finding ways to take advice and learn from and with whānau.
Mahi Ngātahi	Asking learners for their ideas about the learning contexts and being prepared to act accordingly. Working together as one, collaborating to achieve common outcomes.
Whanaungatanga	Thinking about what you would want for your own child or whānau member and helping this play out for other people's children in your school. Taking responsibility to provide care and support to learners and then expecting the highest in terms of your combined endeavours.
Whakapapa	Working to know the learner and their whānau, who they are, and what their experiences are. Being prepared to reciprocate by working to understand your own cultural identity, values, and assumptions and the way that these can impact (both positively and negatively) your interactions and relationships with learners and their whānau.
Kaupapa	Ensuring, through ongoing dialogue, and face-to-face meetings across multiple settings and with multiple groups, that what you want for the schooling of your learner is the same as what they and their whānau want as well.

Adapted from 'Cultural Relationships for Responsive Pedagogy: A Bicultural Mana Ōrite Perspective' Mere Berryman, Dawn Lawrence, and Robbie Lamont (2018)

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CULTURALLY RESPONSIVE PRACTICE

"(Culturally Responsive Pedagogy) is understood and defined differently across Aotearoa New Zealand, and indeed the world. Sometimes it appears that there are as many definitions as there are people talking about it."

Berryman et al, 2018

Given the range of definitions and understandings available for "culturally responsive practice" it became important for us to establish a clear understanding of culturally responsive practice at Long Bay College. The diagram below, explains the overlaps between culture, responsivity, and pedagogy. Within culture sits knowing, understanding and championing Aotearoa's bicultural partnership, the principles of Te Tiriti o Waitangi and the Tātaiako. This is done through knowing and supporting Tikanga Māori, Te Reo Māori, Te Ao Māori, Mātauranga Māori, and Mana Ōrite. Within responsivity sits engaging with learner, whānau, hapū, iwi and community voices and then making changes reflective of that voice. Finally, within pedagogy sits selecting and applying high-quality and research proven practices and strategies to support learners.

Wing, L. and Heneghan, J. (2021) 'Culturally Responsive Practice'. Diagram, unpublished.

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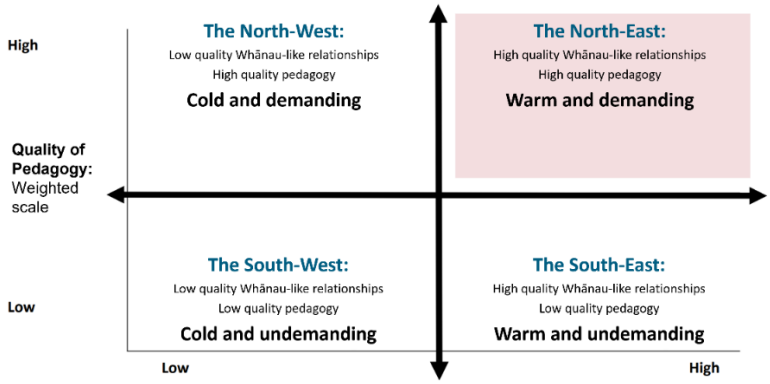
TEACHING TO THE NORTH-EAST

Common threads in our Professional learning
Supporting our learners in "walking the spaces" they live and learn in is critical.
Positive, learning focused relationships that genuinely value the child matter to a high degree.
Good practice responds to the needs of the individual learners.
Adapted from Webber, Bishop, Hammond, Berryman, Bennett, Sherrington

Relationships: critical for learning
Accounting for Maslow (1943): "The most limiting factor on the learning of Māori (and consistently across marginalised groups) is when they view their in-class relationships as toxic."
Bishop and Berryman (2007)

Teaching To the North-East - Derived from Bishop et al (2007)



Source: Bishop et al (2007)

North-East Teaching at Long Bay College

Wing, L. and Heneghan, J. (2022)

Qualities of a North-East teacher:

Explicit focus on building rapport or trust with learners. Warm or firm tone when needed, some humour.

Shows personal regard for learners by inquiring about important people and events in their lives.

Earns the right to demand engagement and effort.

Very competent with the technical side of instruction.

Holds high standards and offers emotional support and instructional scaffolding to dependent learners for reaching the standards.

Encourages productive struggle. Viewed by learners as caring because of personal regard and "tough love" stance

Qualities of a North-West teacher:

No focus on building rapport or trust with learners.

Organises instruction around independent learners and provides little scaffolding.

Unconsciously holds low expectations for dependant learners.

Makes certain learners feel pushed out of the intellectual life of the classroom.

Mistakes cultural differences of culturally and linguistically diverse learners as intellectual deficits. Viewed by learners as cold and uncaring.

Qualities of a South-East teacher:

Explicit focus on building rapport or trust with learners.

Makes excuses for the lack of academic achievement of learners.

Consciously holds lower expectations out of pity. Tries to protect learners from failure.

Either over-scaffolds instruction or dumbs down the curriculum. Doesn't provide opportunities for learners to engage in productive struggle.

Liked by learners but viewed as a push-over.

Adapted from Bishop (2019) and Hammond (2014)

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TEACHING TO THE NORTH-EAST AND SUPPORTING HIGH QUALITY FORMATIVE ASSESSMENT

A key and early learning on our Tino Akoranga journey was the need for a shared understanding of what great teaching and learning is, not just as described in wider research overseas but grounded in our setting, Aotearoa, New Zealand. This work led to the development of three foundational ideas: “Tikanga”, “Ako” and “Mahara”.

Supporting Tikanga, Ako, and Mahara are:

- Evidence-Based Formative Assessment, by which we can judge the efficacy of our teaching approaches for our learners, plot our next steps for their learning, and by which our learners can have ownership over their own learning.
- Relational Pedagogies, supporting the development of effective learning relationships and learning interactions, as well as supporting culturally responsive practice.
- ‘Northeast’ practice, as described by Bishop (2019, 2023), anchoring good teaching as a combination of strong relationships, combined with strong teaching skill.

Northeast Pedagogies *As described by Bishop, 2019, 2023*	Evidence-Based Formative Assessment *As described by Wiliam and Leahy, 2015*
Northeast teachers should: Reject deficit explanations about their learners. Care for their learners. Demonstrate high expectations. Be knowledgeable about what their learners need to learn, for example numeracy and literacy. Be adept in strategies to promote learning such as overt instruction and formative assessment. Promote learning through the provision of feedback. Promote learning through drawing on the prior knowledge of their learners.	Formative Assessment: Is the range of evidence informed strategies that teachers can use to support their learners to make progress. Can identify students’ progress as well as highlighting gaps in their knowledge and understanding to give the teacher useful insight as to what feedback and instruction can be provided to continue to move learners forward. Takes place during the learning process. It continually informs the teacher and the student as to how learning can move forward as it is happening.

Relational Formative Assessment Strategies can include:

- Clarifying and sharing learning intentions and success criteria
- Engineering effective discussions, tasks and activities that elicit evidence of learning.
- Providing feedback that moves learners forward.
- Activating students as learning resources for each other
- Activating students as owners of their own learning

For these practices to be most effective, teachers must actively sustain Northeast pedagogies.
This includes supporting effective learning relationships and interactions between themselves and the learner, and between the learners themselves.

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TEACHING TO THE NORTH EAST AND SUPPORTING HIGH QUALITY FORMATIVE ASSESSMENT

J Heneghan, L Wing, 2023.
Influenced by Russell Bishop (2019), (2023) , Wiliam and Leahy (2015)

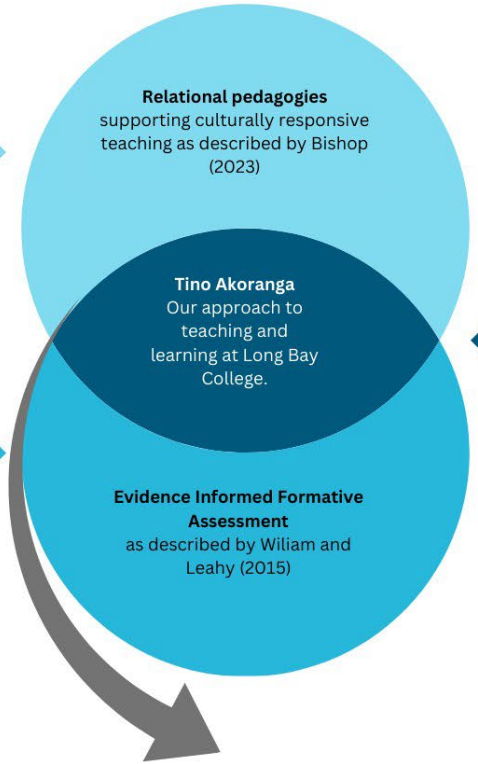
Tikanga
Tikanga is about creating a learning focused culture. This should be one where ākonga feel known, cared for and that success is highly valued. We strive to create a sense of whanaungatanga in our classrooms.

Ako and Mahara
Ako is about becoming experts in both what we teach, and how to teach it.
This includes knowing how best to teach your subject. It is knowing what strategies work best, knowing how ākonga engage with the subject and being knowledgeable in the subject itself.

Mahara is about working with, not against the brain during the entire learning process.
This means being mindful of cognitive load, supporting ākonga to move from novice to expert and helping new learning to eventually be stored in the long term memory.

Bishop (2019, 2023)
North East teachers should:
- Reject deficit explanations about their learners.
- Care for their learners.
- Demonstrate high expectations.
- Be knowledgeable about what their learners need to learn, for example numeracy and literacy.
- Be adept in strategies to promote learning such as overt instruction and formative assessment.
- Promote learning through the provision of feedback.
- Promote learning through drawing on the prior knowledge of their learners.

Wiliam and Leahy (2015)
Formative assessment:
- Is the range of evidence informed strategies that teachers can use to support their learners to make progress.
- Can identify students progress as well as highlighting gaps in their knowledge and understanding to give the teacher useful insight as to what feedback and instruction can be provided to continue to move learners forward.
- Takes place during the learning process. It continually informs the teacher and the student as to how learning can move forward as it is happening.



Relational Formative Assessment Strategies

Clarifying and sharing learning intentions and success criteria

Engineering effective discussions, tasks and activities that elicit evidence of learning

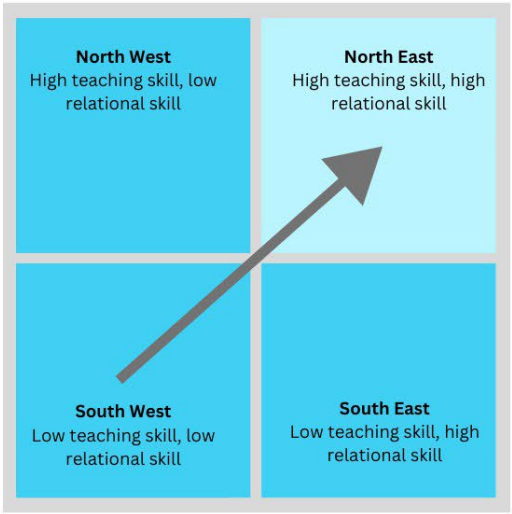
Providing feedback that moves learners forward

Activating students as learning resources for each other

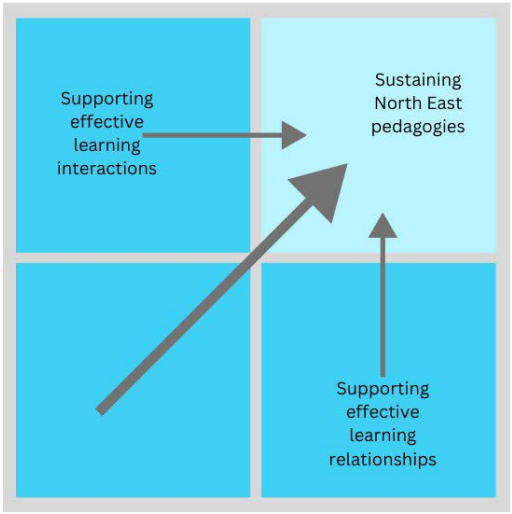
Activating students as owners of their own learning

For these practices to be most effective, teachers must actively sustain North East pedagogies. This includes supporting effective learning relationships and interactions between themselves and the learner, and between the learners themselves.

Between 2019 and 2023 we have developed adaptive routines, aligned to **Tikanga**, **Ako** and **Mahara** (Our exceptional learning principles) these explicitly supporting teachers in applying research informed practices that consider the learner, the learners backgrounds, the teacher, the subject, the classroom and the cognition of all, to support high quality teaching and learning.



Teaching to the North East is a framework devised by Russell Bishop (2019). This framework anchors good teaching as a combination of strong relationships, combined with strong teaching skill.



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MAHI TAHI - DEVELOPING OUR APPROACH FOR WORKING TOGETHER AS ONE

A key and early learning on our Tino Akoranga journey was the need for a shared understanding of what great teaching and learning is, not just as described in wider research overseas but grounded in our setting, Aotearoa, New Zealand. This work led to the development of three foundational ideas: “Tikanga”, “Ako” and “Mahara”.

Each of these resonated across our staff and curriculum areas, giving our teachers a common ground that was mindful of the differences in specialist subject teaching but also supported the development of adaptive routines that applied research to practice. This application considered the learner, the teacher, the subject, the classroom, and the cognition of all, to support the highest quality teaching and learning. Those routines iterated to include a range of assessment for learning approaches that help ground our teaching and learning. While we face unprecedented levels of curriculum change in New Zealand, our fundamentals of collective practice have a robust research-base.

Developing Mahi Tahi

What can we as a school do to secure a fidelity of exceptional teaching and learning across our College?
With that in mind, we have followed the same approach used to develop Tino Akoranga to develop **Mahi Tahi**. We looked at our practice, considered that of others and reviewed the literature around supporting great collective practice. We considered how best to support our teachers in feeling safe to take risks with their practice and for the observation of our wider classroom practice to be what it must be; grounded in trust and so much more than an exercise in accountability or performance.

Translated from Te Reo Māori “Mahi Tahi” means “we work together as one”. “Mahi Tahi” is a way we will cultivate trust, professional growth, support ongoing curriculum and pedagogy development, apply our prior work in developing specific research informed teaching strategies and normalise teachers visiting and sharing their practice with each other.

On our journey to develop **Mahi Tahi**, the curriculum and pedagogy team at Long Bay College invested significant time reviewing and considering wider literature on mentoring and lesson observation and in particular the work of Professor Matt O'Leary and Craig Randall. We found ourselves with some significant learning about lesson observations as they traditionally occur across the profession, around the world.
Of particular interest were the following findings:

- Professor Matt O'Leary describing the feeling of teachers not feeling safe or supported in lesson observations.
- Craig Randall describing that observations need to be about growing practice and not about compliance.

While annual reviews of Faculty and formal observations of practice serve vital roles in schools and in schooling, they have limitations.
These limitations become vividly clear when considering how to embed a culture of “improving not proving” in a school.
The multiple purposes of the traditional lesson observation can lead to practice that can be problematic – namely compliance checklists or practice that is contrived or highly performative.
These considerations and our commitment to secure trust-based practice have helped to shape our thinking and have ultimately led to the development of our **Mahi Tahi** initiative.

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MAHI TAHI - OUR APPROACH

Mahi Tahi means to work together as one. If we can meaningfully collaborate, know our practice and discuss our next steps as a group, we are more likely to experience success. It is an initiative to support our collective knowing and sharing of practice in Faculty and as a wider teaching staff.
Our conversations about practice are about active listening and reflection. This all builds on a foundation of research-based pedagogy and is intended to sustain our professional learning culture that is, at its heart, about improving student outcomes, trusting our staff, and collectively walking our talk about improving not proving.

Mahi Tahi supports:

- The strategic direction of Long Bay College
- Ongoing curriculum and pedagogy development by helping classroom teachers and Heads of Faculty work together and to grow their practice.
- The cultivation of trust and professional growth.
- The application of our prior work in developing specific research informed teaching strategies.
- Pedagogies that act as direct scaffolds supportive of meaningful and effective formative assessment.
- Normalising teachers visiting and sharing practice with each other as an everyday feature of practice

Mahi Tahi primarily resources Heads of Faculty to see and support the development of high-quality formative assessment through visits to the classrooms in their Faculty. The "Trust based observation" approach by Craig Randall (2020) a significant consideration of Mahi Tahi and embedded into these visits.

Mahi Tahi classroom visits are:

- Focused on one class at a time.
- Support one teacher at a time and are no shorter than 15 minutes and no longer than 30 minutes. (The time spent visiting needs to be meaningful, and enough for the HOF to have a clear picture of the practices being used). This demonstrates a commitment on behalf of the HOF to really engage with the classroom visit, as opposed to simply conducting the visit as a box-ticking exercise. Extended observation increases the stakes for the teacher being observed, that tension running counter to trust building.
- Are organised in advance and are coupled with a conversation about relevant contextual elements about the class. (The conversation about classroom context is important in so much as it may reduce HOF misconceptions about what they end up seeing, as well as providing an opportunity for teachers to feel more confident and safer to be observed, having had the chance to disclose potential areas they may already be focussing on in their practice with that class).
- Have consistency around post observation feedback through trust-based post observation discussion questions. The classroom visits being followed up within 36 hours with a conversation between the teacher and the Head of Faculty.

Mahi Tahi Conversation Questions

Question	Rationale
How were you supporting your learners to learn?	This question allows for the teacher to discuss their practice, and the deliberate choices they were making to support student outcomes. It reiterates the focus of the observation on student learning and teacher support of that learning.
What would you do differently next time?	This question opens the door to a discussion around the next steps in their practice. A teacher may already have ideas as to their next steps, this empowers teachers to discuss those ideas. It creates an opportunity for the teacher to ask for advice, instead of having this advice imparted without solicitation.

Trust based questioning create the space for a teacher to elaborate on their practice as well as assess and discuss their next steps. They encourage 'inquiry mindedness" (Timperley et al, 2014) in so much as teachers are encouraged to be continuously considering their next steps.

MAHI TAHI - OUR APPROACH FOR 2024

Legitimacy begins with trust: nothing will move until trust is firm. (Greenleaf, 2002)

Theoretical *What research says*	Mahi Tahi - Overview *What this is, and how it could work*
Barriers to successful lesson observation, adapted from O'Leary (2020) As soon as an evaluator or developmental rating of pedagogy enters the picture, teachers become cautious and fearful, and stop taking risks. Teachers don't feel safe or supported in observations. Teachers must trust you and feel safe in order to take to be willing to take risks and try new things .	**Mahi Tahi is supportive of:** • The cultivation of trust and professional growth. • Ongoing curriculum and pedagogy development. • The application of our prior work in developing specific research informed teaching strategies. • Pedagogies supportive of effective formative assessment. • Normalising teachers visiting and sharing practice with each other.
'Trust Based Observations' an approach from Randall (2020) Observations are based on growing practice, not compliance. Teachers are observed for short amounts of time, regularly by leaders. Teachers are supported to explore their practice through simple follow-up questions, designed to elicit teacher reflection. Leaders foster trust by actively listening to these answers, focus on strengths and being considerate of the person in front of them.	**Our Mahi Tahi Approach** • All teachers are visited by their HOF. • One class is visited at a time, and visits are between 15 and 30 minutes. • Visits are organised in advance, with class context known or discussed. • Visits are followed up with a conversation within 36 hours. • Resourced with release time and scaffolds to support doing it consistently and well.

Mahi Tahi reflection questions

These two questions are used in the post-visit conversation to stimulate a reflective conversation between the observed teacher and their observer. They are informed by Randall (2020).

How were you supporting your learners to learn?

This question allows for the teacher to discuss their practice, and the deliberate choices they were making to support student outcomes.
It reiterates the focus of the observation on student learning and teacher support of that learning.

What would you do differently next time?

This question opens the door to a discussion around the next steps in their practice. A teacher may already have ideas as to their next steps, this empowers teachers to discuss those ideas. It creates an opportunity for the teacher to ask for advice, instead of having this advice imparted without solicitation.

Adaptive routines supporting relational formative assessment

Ako - 2022
Ako is about becoming experts in both what we teach, and how to teach it. This includes knowing how best to teach your subject. It is knowing what strategies work best, knowing how learners engage with the subject and being knowledgeable in the subject itself

- Student Generated Questions
- High Efficacy Group Work
- High Quality Learning Intentions
- Effective feedback
- Effective Questioning Approaches
- Checking for Understanding

Mahara - 2023
Mahara is about working with, not against the brain during the entire learning process. This means being mindful of cognitive load, supporting learners to move from novice to expert and helping new learning to eventually be stored in the long term memory.

- Activating Prior Knowledge
- Explicit Instruction through examples
- Guided Practice: FAME
- Improving Retrieval Strength
- Summarising
- Mapping
- Self-testing
- Self-explaining
- Teaching others

Our Mahi Tahi Timeline for 2024

- Approach shared with and explained to with SLT and HOFs in Term 4, 2023
- SLT and HOFs practice the approach as a group during Term 1, 2024.
- All staff PLD to support shared understanding of the what and why of this initiative in Term 1, 2024
- All staff PLD supporting relational formative assessment strategies and their connection to Ako and Mahara. Term 1-2.
- Faculties planning to embed relational formative assessment strategies through QA Action Plans. Term 1.
- Mahi Tahi visits begin in Term 2, supported by time resourcing and ongoing SLT support.
- Faculties reflecting on in-use relational formative assessment strategies and next steps based on Mahi Tahi, WSL feedback and PLD. Term 2-3.
- Schemes of work iterated to refer to in-use relational formative assessment strategies. Term 3-4.
- Faculty showcase of relational formative assessment routines. Early Term 3.
- Ongoing review of relational formative assessment and Mahi Tahi approach via QA Action Plan reviews.
- Relational formative assessment routines evident in practice and schemes of work across faculties. Term 4, 2023.

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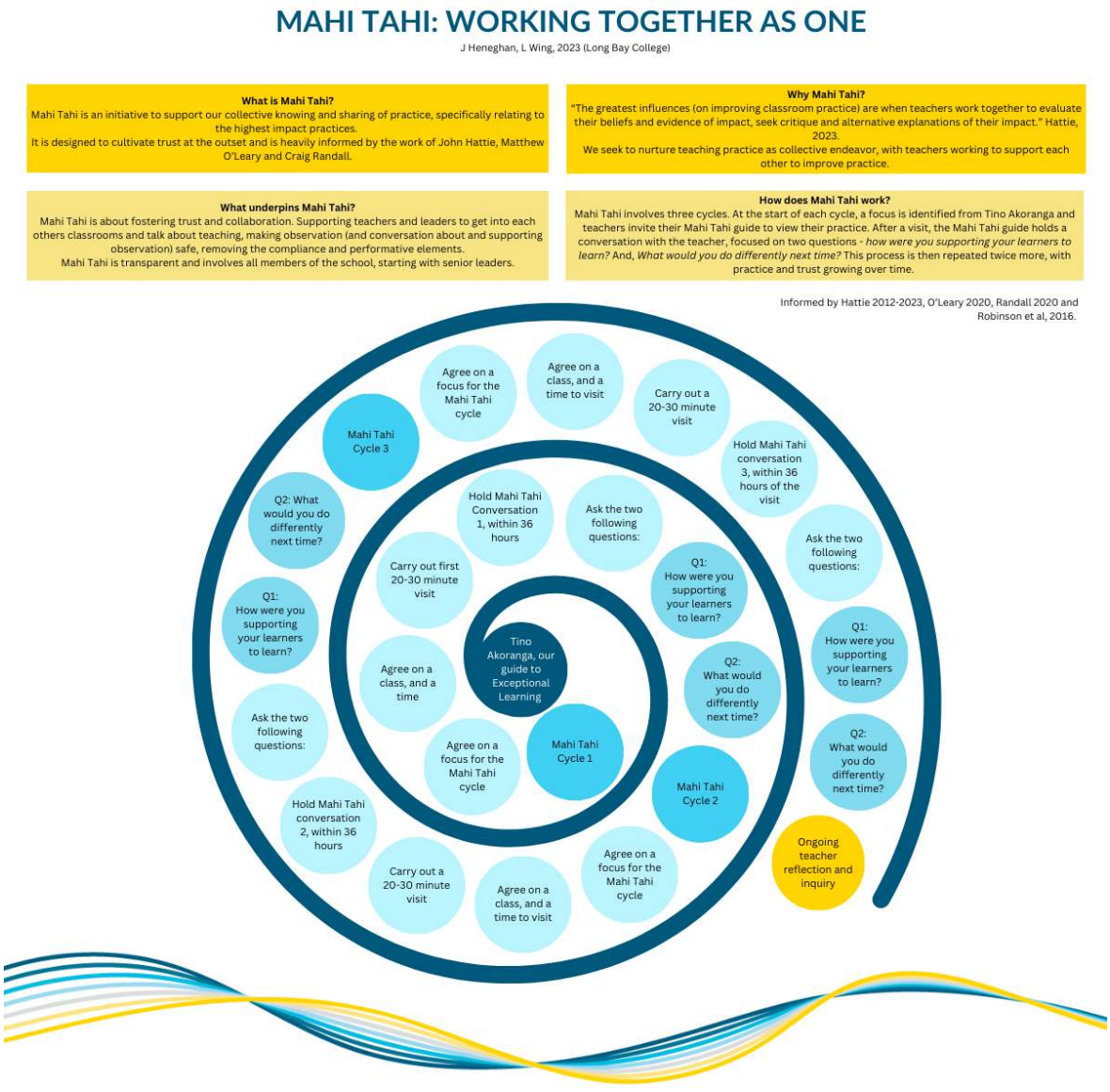
MAHI TAHI - WORKING TOGETHER AS ONE

Our lesson observation approach, Mahi Tahi (Working Together as One) - seeks to develop and sustain trust between teachers. It fosters the conditions for teachers to feel safe to try new things and for sustained growth to occur. Trust is the critical precursor for growth. It creates the conditions where teachers can feel safe to have their practice seen, take chances with their lessons and engage in open and reflective conversations about what they are doing and what they plan to do next.

Mahi Tahi follows a spiralling approach, with three rounds of observation and discussion held between a teacher and a guide. This approach supports teachers in talking about what they have tried, and what they plan to try next. It is not expecting the teacher to be perfect, instead encouraging consideration and reflection into what could change for next time. Authenticity and legitimacy are key drivers of trust.

Our graphic below illustrates the spiralling nature of Mahi Tahi. We begin at the centre, with our research-based approach to teaching and learning at Long Bay College, Tino Akoranga. From there, teachers select strategies to trial in their classes, and invite their Mahi Tahi guide to see their practice. Thereafter, the teacher and the guide discuss the lesson, with that conversation focused on two questions:
How were you supporting your learners to learn? And, What would you do differently next time?
This approach is then repeated twice more over a series of weeks, with the guide returning to see the teacher develop their practice further, based on their conversations.



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MAHI TAHI - POST OBSERVATION CONVERSATIONS

Teachers value post observation conversations and having the opportunity to discuss and reflect on their teaching.

Observation and conversations about practice have the clear potential to massively drive the professional and personal growth of teachers and to positively transform practice. That said, there are well described concerns in professional literature as to how well these conversations are carried out across schools from all over the world with performative practice and compliance approaches evident in many settings. Mahi Tahi is our approach, designed to move beyond compliance and performance and into a space of growth and mutual trust and respect. Our observations of practice grounded in our school's approach to pedagogy – Tino Akoranga, and Mahi Tahi, our scaffold supporting trust focused observation and post observation conversations.

Given that trust is keystone and that authenticity and legitimacy have the potential to drive trust, we cannot ad-lib, forget, underplay or rush to the finish line. Trust and safety must come first.
"For teachers to enthusiastically embrace taking chances, ingredients that cultivate the confidence to take risks must be added and obstacles that interfere with risk taking eliminated". Craig Randall, Trust Based Observations, 2020
"The truth is that legitimacy begins with trust: nothing will move until trust is firm".Robert Greenleaf (2002).

Setting up for success – Best and Safe practice before and during Mahi Tahi conversations

- Ensure that all parties know what is going to be happening, and the purpose.
- Ensure that any hesitations and/or concerns are heard ahead of time.
- Let the person being observed lead the way with the what, who and when of the observation (at least in the first iteration).
- Channel your nicest, most appreciative self while in the room
- Keep it light, and the vibes positive. This is especially important when first using this approach.
- Remain present and engaged in the lesson.
- Remember that you might not see what you are looking for, but that does not mean it isn't happening.
- Have the conversation soon after the lesson. Ideally within the next 24 hours, 36 hours is the maximum.
- Make sure that this conversation happens in person – do not email it.
- Ask for permission, this shows respect for the teacher and their time.
- Have the conversation in the teacher's classroom. Teachers feel more comfortable in their own space, and you coming into that space, as opposed to them coming to your office supports creating and maintaining a safe and trusting relationship.
- To build a sense that the process is collaborative, sit beside the teacher instead of across. It removes the table as a barrier and build trust.
- If you are writing up notes, make sure the teacher can see everything that is being typed. Transparency supports trust.

Mahi Tahi review questions

These two questions are used in the post-visit conversation to stimulate a reflective conversation between the observed teacher and their observer. They are informed by Randall (2020).

How were you supporting your learners to learn?
This question allows for the teacher to discuss their practice, and the deliberate choices they were making to support student outcomes.
It reiterates the focus of the observation on student learning and teacher support of that learning.

What would you do differently next time?
This question opens the door to a discussion around the next steps in their practice. A teacher may already have ideas as to their next steps, this empowers teachers to discuss those ideas. It creates an opportunity for the teacher to ask for advice, instead of having this advice imparted without solicitation.

MAHI TAHI : SUPPORTING SAFE & GROWTH-FOCUSED POST-OBSERVATION CONVERSATION

Working collaboratively alongside colleagues strengthens trust, reinforces the professional and social connections within a school and supports teachers in being able to communicate their practice to others.
Effective post observation conversations between teachers about practice should be safe and focused on growth.
The graphic below, an outline that seeks to support teachers engaging in a Mahi Tahi conversation with safe and growth focused approaches at the forefront of practice.

L Wing, J Heneghan, 2023.
Informed by Hattie 2012-2023, O'Leary 2020, Randall 2020 and Robinson et al, 2016

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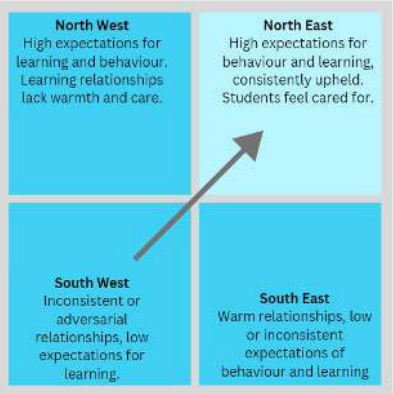
TIKANGA - INCLUSIVITY, AND THE IMPORTANCE OF CONSISTENCY

The Tikanga in our classrooms needs to be established and cultivated. As teachers, we have guardianship (Kaitiakitanga) for our learners, their learning, and our classroom tikanga.

Tikanga and Teaching to the North-East
Effective Tikanga can come from us aiming for the North East quadrant.
In that quadrant, our focus is on ensuring learning, with the relationships we hold being a combination of *warm* and *demanding,* coupled with high expectations teaching and effective pedagogical approaches.

We can support the development and sustainment of effective Tikanga by:
Being proactive: we create an environment in which learners understand our expectations of behaviour, engagement, and learning. Being responsive: we acknowledge and celebrate good behaviour and correct behaviour that runs counter to our desired classroom tikanga.

Wing, 2023



A team requires everyone to be working towards the same goal.
This can be called 'collective efficacy'.
Collective efficacy is about teachers working in the same direction to support student outcomes (Donohoo 2017).
John Hattie's Meta-study (2016, 2017, 2018) describes teacher collective efficacy as having the greatest impact out of all interventions on student outcomes.

Barriers to Collective Efficacy:
A lack of clarity or understanding around what is expected
Teachers not seeing the value in the change or agreed approach for them, or their learners.
Teachers reverting to practices that feel more natural or comfortable to them

Van Veen and Sleegers, 2006

Why be consistent in our classroom approaches?
"Having consistently high expectations and behaviour has got to be the fundamental base to build from to support learners with special educational needs. Without a clear, consistent and relentless drive to ensure the school's behaviour policy is followed by adults and learners, the school culture can be seen as unsafe, unreliable and raising anxiety in many learners" (Reaves et al., 2018).

Working Memory Limitations
According to Miller, 1956: the brain can hold seven pieces of information in the working memory at once. This can include information from learning, as well as attention being paid to environmental and emotional factors (Cowan 2001, Figueira et al, 2017)
In a classroom this is more likely to be between three to five pieces of information, depending on inhibits around the person. It can be lower when there are other peripheral factors affecting working memory, such as neurodiversity (Cowan, 2001).

Our Aim?
- Reduce the non-productive drains on working memory, to enable its devotion to learning.
- These non-productive drains can be called 'extraneous load'.
- This is cognitive load stemming from the way that information is being presented, and stimuli in the classroom. It does not aid learning, instead taking up working memory space.

Factors adding to Extraneous Load and considerations for addressing them	
Environmental factors such as noise, sights and smells, proximity to others and the role of devices. Inconsistency within and between classes	- How are you managing noise? - How are you managing seating? - Where is attention being directed? - What is your classroom environment like? - How are elements such as devices are managed to reduce distraction and secure attention? (Bar Anan et al, 2006; Cohen et al, 1980; Evans and Steckler, 2004; Lang 2016, 2020; Montello, 1988, Uline et al, 2008,)
Student hauora, including self-esteem, physical and mental health.	- Are your learners ready and able to learn? - How do they feel about themselves, and how do they feel about themselves as learners in your subject? - What do they think you think about them? - Do the learners interact positively with each other? How is this supported, and what do you do when this is not the case? (Baddely, 1974; Cowan 2001, Figueira et al, 2017)
Inconsistency within and between classes	- What classroom culture have you shaped? - What roles are played by each learner in the room? - How do you respond to behaviours that do not align with expectations? - What other routines are in place? How are these kept consistent? - How do you know these routines are understood by all? Bishop, 2019; Reaves (2018)

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TIKANGA – SUSTAINING A CLASSROOM CULTURE FOR LEARNING

Tikanga: Our living classroom culture for learning.
Tikanga in our classrooms needs to be established and cultivated. As teachers, we have guardianship (kaitiakitanga) for our learners, their learning, and our classroom tikanga. We can sustain tikanga through whole class and individual approaches:

Whole class approaches:
For the most part, when sustaining tikanga, we act at the 'whole class level'.
Be proactive: we create an environment in which learners understand our expectations of behaviour, engagement, and learning.
Be responsive: we acknowledge and celebrate good behaviour and correct behaviour that runs counter to our desired classroom tikanga.

Proactive Strategies:	**Responsive Strategies:**
You noticed that, in the previous lesson, some learners were chatting or not working well together. You change the seating plan for the next lesson.	If learners are slow to begin the lesson: "Awesome to see that Mary, Hyungmin and Frano have taken their books out and are ready to start the lesson."
Routines are newly established. You continue to practise routines to ensure routines do not slip/are forgotten.	When one or two learners have slowed down or have drifted off task: "It's excellent to see most people have started task one and our now moving onto task two."
Attention is waning when giving instructions. In the next lesson, you carefully script your instructions to ensure they are clear, concise, and precise.	When learners take time to transition from group work to teacher talk: "I am waiting for two groups [looks at groups still talking]. Awesome. I am now waiting for one group to be listening and not talking."
Transitions are beginning to slow down or are becoming 'messy'. You plan, in advance, each step of the transitions in the next lesson, reminding learners, at each step, what they need to do.	Reminder about classroom tikanga is positive and specific: "Remember in *our* class, we work co-operatively by each contributing our ideas to the group we are working in."

Individual approaches:
At times, an individual learner may require further support to ensure they are able to contribute positively to the classroom tikanga. This could mean **clarifying** instructions or tasks and then **redirecting** learners back to learning or onto the next step, considering the specific learning needs of the learner, and, finally, actively **teaching** and supporting the learner in the behaviour that you need from them. Apply restorative practices to build and sustain positive learning relationships.

Clarify and Redirect:	**Examples: Clarify:** "What is the activity that we are working on now?" Redirect: "Awesome, Billy, you know exactly what to do; now let's work silently to complete this task."
Check that the learner knows what to do. Learners may not behave in the way that we expect them to due to confusion. Our instructions may have been a mystery to them; they may not know how to start the task, or they may not know what to do once the task or activity is complete.	**Clarify:** "Can you explain to me what we are doing in this task?" Redirect: "Great, so you've got the first part; remember that we also need to make a brainstorm for question two. Can you do that as well?
Have a plan for when learners don't know what to do and respond with clarifying instructions or information and redirect learners to the behaviour we expect from them.	**Clarify:** "Frank, where are you up to?" Redirect: "Great! You've finished. Now, in this class, what do we do when we have completed all of the tasks?"
Note: we cannot just use this strategy in isolation – it is for low level support only. If we use it too frequently then off task behaviours may persist.	

Specify: All learners are individuals. They come with different learning needs that are specific to them. At different times, they need assistance to help them to access learning. We try to understand what barriers are in place for learners so that we can assist them to access the learning. This often requires a specific one-on-one conversation. Note: once we have understood some of the barriers to learning, we may require support from colleagues, specialists and/or whanau.	**Examples:** "What are you finding challenging about this work?" "Can you tell me why you weren't able to finish your homework?" "What have you enjoyed so far about Spanish? What have you found challenging? What makes it challenging?" "What do you feel most confident doing? What questions do you have about titrations?" What could we do differently next time to help you meet the next checkpoint?"
Teach: As kaitiaki of our classroom tikanga we sometimes will need to explicitly teach learners the behaviour we wish to see from them. This might involve a conversation about behaviour, one-on-one. Keep this interaction restorative and supportive of the learning relationship. If possible, deliver the messages privately by speaking quietly or taking the learners aside. Keep your focus on the primary misbehaviour and do not allow the learner to move you on to side issues and to get you into public arguments. **Note**: if this continues, then follow restorative and faculty policies to support appropriately.	**Examples:** Name the behaviour that is occurring: *"Harrison, you are talking when I am giving an instruction to the class."* State why this behaviour is a problem: *"This is a problem because when I am giving an instruction and you are talking others can't hear what the instruction is."* Describe the specific behaviour that you would like to see: "*When I am standing at the front and giving the class an instruction, you need to be silently listening without speaking."* Check for understanding: *"Can you do that for me?"* End on a positive: *"Awesome, Harrison, I look forward to seeing you tomorrow."*

TIKANGA – WORKING EFFECTIVELY WITH TEACHER AIDES

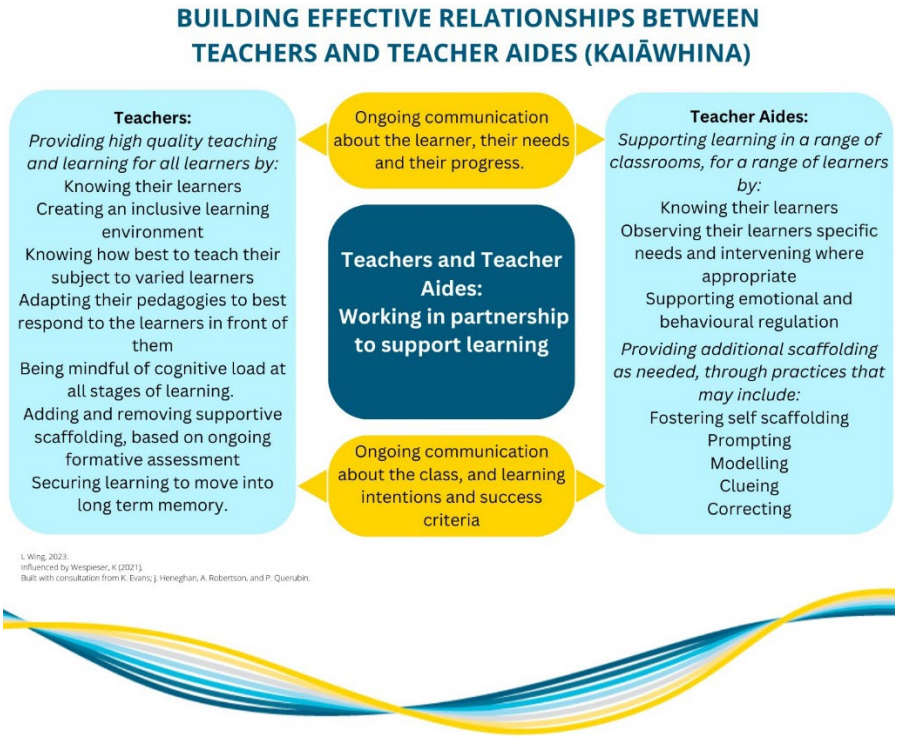
Teacher Aides, Learning Assistants or Kaiāwhina play a critical role in supporting the learning of all learners. While they often may be attached to one specific student, they also can work with a range of students, or indeed support with an entire class. Along with supporting learning, behaviour, focus and emotional regulation, Teacher Aides can bring another perspective to planning and classroom approaches, as well as often holding specific knowledge of learners as they journey through the day and their various subjects.

Teacher Aides can provide the following layers of support:

Layer of support	Explanation
Self-scaffolding	The TA's default position is to observe learner performance, allowing time and space for them to process, think and try the task independently. TAs need to get comfortable with learners struggling a bit and recognise this as an essential component of learning.
Prompting	This is where TAs might intervene with a "nudge": 'What do you need to do first?'; 'What's your plan?'; 'You can do this!'
Clueing	Often learner know the problem-solving strategies that prompts are designed to elicit, but they find it difficult to call them to mind. Clues are a question or small piece of information to help learner work out how to move forward. They should be drip-fed; always start with a small clue.
Modelling	Prompts and clues are less effective when learner encounter a task that requires a new skill or strategy. This calls for layer four: modelling. TAs, as confident and competent experts, can model while learner actively watch and listen, then try the same step for themselves afterwards.
Correcting	Correcting is where TAs provide answers and requires no independent thinking.

Wespieser, K (2021)

An effective working relationship with a Teacher Aide involves a focus on partnership – they are another professional adult in the room, focused on student outcomes. The best partnerships are based in respect and communication. The graphic below provides suggestions for roles within these partnerships.



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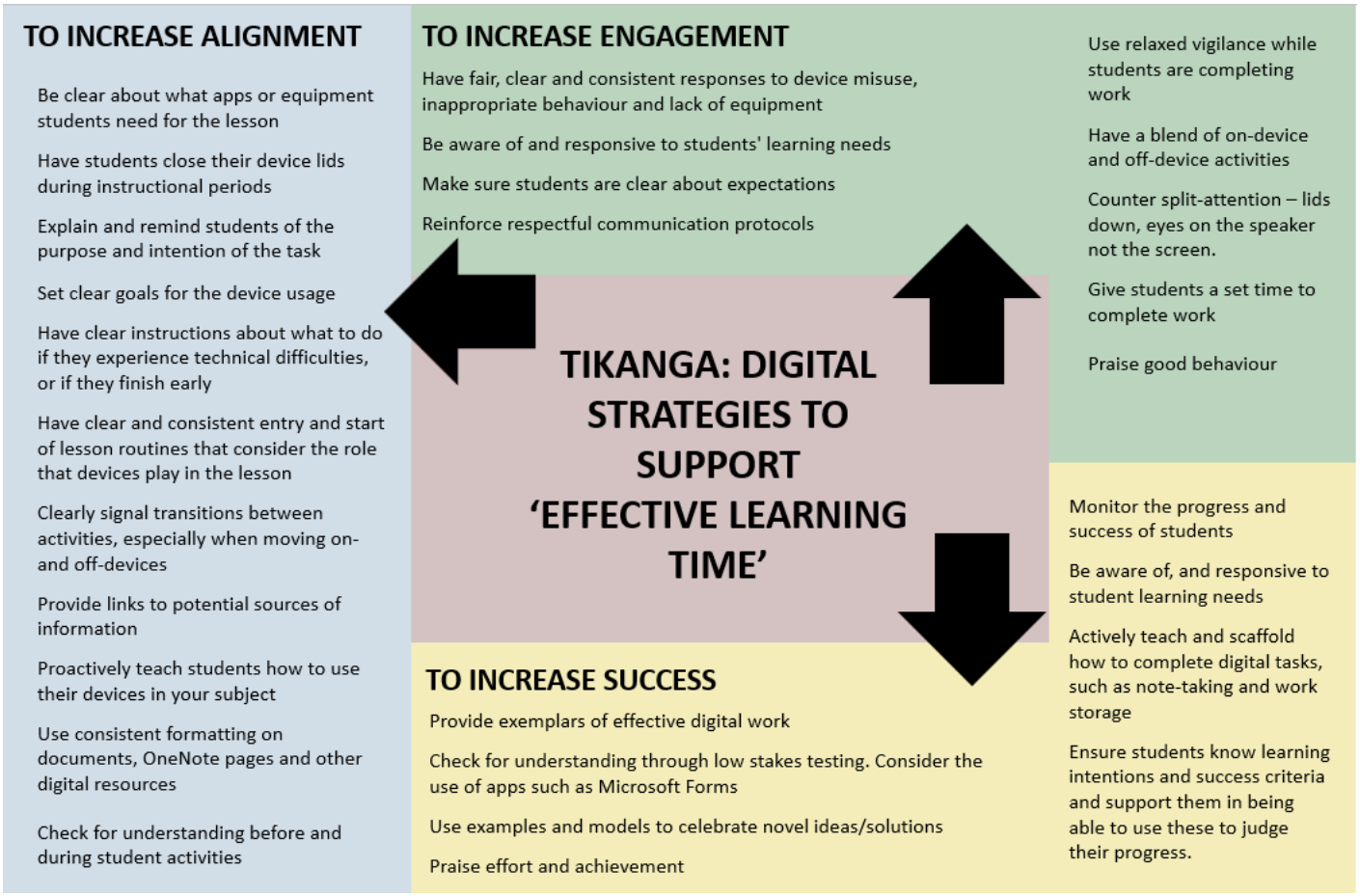
TIKANGA – DIGITAL STRATEGIES TO SUPPORT EFFECTIVE LEARNING TIME

Tikanga is our living classroom culture for learning.
This includes:

- Values of care, respect, creativity, and community being built, celebrated, and sustained.
- Interactions through a restorative lens.
- Positive relationships for learning.
- High expectations set, established, and sustained.
- Routines and expected behaviours being taught and sustained over time.
- Minimised disruption, providing greater opportunity to question, explore and think creatively.

Tikanga And Digital Technologies
The Tikanga we establish and sustain in our classrooms should be mindful of, and responsive to, the opportunities and challenges presented by digital technologies.
"Effective learning time" can be increased in our classrooms through a variety of strategies. These can be both *proactive* and *responsive.* These strategies are supportive of building Tikanga in our classrooms.

Proactive Strategies	**Responsive Strategies**
Create an environment where learners know how they are expected to behave in advance	Acknowledge correct behaviour, correct incorrect behaviour



Simons, B., Lacey, C. and Hughes, M. (2022) 'Tikanga: Digital Strategies to Support Effective Learning Time' Adapted from "Effective Learning Time", Professor Graeme Aitken. Strategies compiled from Long Bay College staff. Diagram, unpublished.

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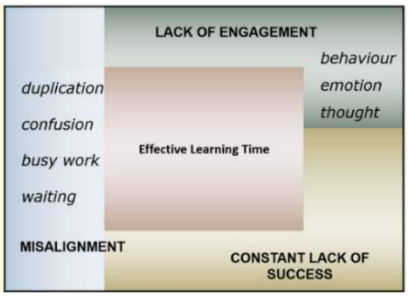
AKO – AN OUTLINE

Ako: know the learner, know what to teach, know how to teach it. Know it has been learnt.
Ako is about supporting the best possible outcomes for our learners. Ako is reciprocal. That means that it places the learner at its centre and recognises that the teacher acts as kaitiaki of the learning of their learners.

Graeme Aitken's "Effective Learning Time" model
Effective learning time refers to methods of teaching and learning that actively involve learners in their own learning and personal development. Specific strategies addressing alignment, engagement and success grow the effective learning time in the classroom.

Graeme Aitken
'Effective Learning Time/Academic Learning Time' (2009-2021)



Know the learner, know what to teach, know how to teach it. Know it has been learnt.
For exceptional learning to happen in our classrooms, we must be experts in both what we teach, and how to teach it. Pedagogical content knowledge is about knowing how best to teach your subject. It is knowing what strategies work best, predicting misconceptions, knowing how learners engage with the subject and being knowledgeable in the subject itself.
In the classroom, this looks like sharing learning intentions and success criteria, asking frequent questions, checking for understanding and balancing challenge with confidence building.

When we 'know' the learner, this means we:
Know the needs of your learner, their background, their aspirations, and goals.
Centre the learner within the learning in ways that respond to their interests, questions, and inspirations.
Listen beyond their words and respond to the person in front of you rather than your assumptions of who they may be.
Have high expectations of all learners.
Add and remove scaffolds to support learners.

When we know 'what to teach', this means we:
Take the perspective of your learners – anticipate their misconceptions and build their confidence around core concepts.
Consider which key ideas and concepts need to be understood.
Consider what prior learning may have already occurred and connect new learning to this.
Consider what parts of this learning may be challenging for novices.
Share examples that support learners in identifying how to approach a problem.

When we know 'how' to teach it, this means we:
Reduce duplication, confusion, busy work and waiting.
Use stories, models, and pictures to assist descriptions and explanations.
Ask regular, probing, and open questions to as many learners as possible.
Share learning intentions and success criteria so learners and teachers know where they are heading and whether they have arrived.
Make thinking clear to support learner understanding.
Guide practice by providing clear expectations of great work and highlighting potential misconceptions.
Use models of excellence to support learner responses.

When we know it has 'been learnt', this means we:
Check for understanding through questions that require learners to demonstrate their understanding or level of fluency with a skill.
Support polished responses by asking for a verbal answer before a written one.
Provide learners with feedback that supports continued learning.

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AKO STRATEGIES - DRIVERS OF WHANAUNGATANGA

Whanaungatanga

"Whanaungatanga is about relationship, kinship, and a sense of connection. It is created through shared experiences and working together and provides people with a sense of belonging. It comes with rights and obligations, which serve to strengthen each member of that whānau or group."

Ware (2009); Ware & Walsh-Tapiata (2010).

Approaches that support whanaungatanga

Reject deficit explanations for learners and their learning.
This means:
- Deficit explanations are not used to explain difficulties that learner may experience.
- Learners are seen as capable and encouraged as they succeed.
- Errors and mistakes are seen as being opportunities to learn and not insurmountable problems.
- The language, culture and heritage of our learners are seen as assets to build upon and not hindrances to learning

***Caring* for and nurturing the learner, including their language and culture.**
This means:
- Culturally appropriate and responsive learning contexts are provided and created.
- Learners can bring their own cultural experiences, knowledge, language and understanding to the learning interaction or conversation.

Voicing and demonstrating high expectations.
This means:
- What is expected of learners is clearly identified, as is what learning involves.
- Activities are cognitively challenging.
- Interactions include talk about learners capability to set and reach short- and long-term goals.

Ensuring that all learners can learn in a well-managed environment to promote learning.
This means:
- Lesson and interactions are well organised with clear routines for learners to interact and learn individually, as pairs or in groups
- Classroom management and learning interactions are implemented in a non-confrontational manner.

***Knowing* what learners need to learn.**
This means:
- Lessons and interactions are well organised with clear routines for learners to interact and learn individually, as pairs or in groups
- Classroom management and learning interactions are implemented in a non-confrontational manner.

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AKO STRATEGIES - STUDENT GENERATED QUESTIONS

Student Generated Questions are questions asked by learners from a teacher prompt. They can be used to generate interest, stimulate new thinking, deepen comprehension, gather information about learner understanding, provide a bank of questions to return to over time, use to plan responsively from, use for learner tasks or assessments, or for revision purposes. They can be used as a really successful revision tool – get learners to write the questions, plus multi-choice answers, then evaluate each other's questions and answers.
They require careful pre-planning, plus a routine for their use to support their success. This includes planning to ensure you are using the right prompt, in the right way, to achieve the outcome you are looking for, as well as having a routine to support learners knowing what to do and being safe and empowered to ask the questions.

Informed by Hancock et al., 2018, Luxton-Reilly et al. 2012, Rothstein and Santana, 2011

"If students are always placed in the position of responding rather than initiating, then we can hardly be surprised if at times they seem passive and flounder when given open-ended tasks".

Foster, C. 'Student-Generated Questions in Mathematics Teaching' 2011

"Having a process for students to develop and ask questions offers an invaluable opportunity to become independent thinkers".

Rothstein and Santana, 2011

A routine for successfully facilitating Student Generated Questions	
Discuss different types of questions	Talk learners through the idea of different types of questions, e.g., open and closed – you might find it helpful to refer to Bloom's Taxonomy with some classes or use a handout. It depends on the class.
Explain what you are going to be doing. Make sure you tell them the purpose, and what will happen to the questions	"I am going to show you a prompt. I want you to think of as many questions as you can about that prompt. Try to go beyond questions that could be answered with one word. Remember when we talked about open and closed questions/Bloom's Taxonomy. The purpose of this is to…, I am going to ____ with your questions. You need to write all of your questions in your…, you need to work individually/in pairs/in threes".
Give learners a prompt.	This prompt should be pre-planned to support success – see later suggestions.
Encourage learners to record as many questions as they can.	Treat all questions as valid. Be neutral in your responses to the questions being recorded. If they are working individually, you might get them to share their questions with a peer after they first record some.
Get learners to rework questions.	"Are any of the questions statements? – Can you turn these into questions?"
Get learners to revisit open/closed questions or Bloom's taxonomy.	"Are there any other questions here that you could ask?" "Could you adapt any questions to be more open?"
Collect in questions.	Remain neutral or positive. You might like to answer some to the class.
Additional extra.	If using for revision, get learners to work in small groups to come up with multi-choice answers to one or more questions. Then share their question and answers with another group to evaluate.

Designing your own 'Student Generated Questions' prompts – A routine. **(Adapted from Rothstein and Santana, 2011)**	
Define the purpose of the student generated question prompt – what do you want to achieve?	Keep your learning intentions and success criteria at the centre while doing this. Are you aiming to: - Generate interest? - Stimulate new thinking? - Deepen comprehension. - Gather information about learner understanding?
Generate possible prompt ideas	Brainstorm lots of possible options. Consider several ways to present the same idea. Could be: - A provocative statement – e.g. "We *must* always follow the scientific method". - An image, video, or recording. - Avoid using questions, or you will get answers, not questions.
Identify the pros and cons of each, based on the following criteria	Does your prompt: - Have a clear focus? - Not ask a question? - Provoke and stimulate new thinking? - Show teacher preference or bias? - Achieve what you need it to do in relation to your learning outcomes?
Select the best option based on that evaluation	Out of your evaluated prompts, which prompt responds to each of the criteria the best? Use that one!
Imagine the questions your learners may come up with	This allows you to: - Ensure that there are questions that could be asked – avoids cricket noises! - Be able to respond to some of the questions then and there – builds interest and excitement.

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AKO STRATEGIES - JIGSAW TEACHING AND HIGH EFFICACY GROUP WORK

Allocating students to groups and instructing them to "work together" or "co-operate" will not bring about the academic or social outcomes that co-operative learning promises. Because traditional group work is widely implemented, particularly in primary classrooms, it is easy for teachers to assume that group work equates to co-operative learning. It does not. Working round a table on individual tasks with opportunity for discussion is not co-operative learning. Nor is having a team discussion, where some students can dominate or "hitchhike".

Thomson & Brown (2000)

PIGSLY Model for Effective Group Work (Thompson & Brown, 2000)

Positive Interdependence

Interdependence = a mutually dependent relationship. This can be created through:

- Having a mutual or common goal
- Dividing labour to ensure that everyone contributes to the final product and has individual responsibility.
- Designing tasks that encourage learners to share resources and knowledge among other members of the group.
- Establishing 'group roles' and learners "actively engaging" in these roles (Hattie, 2017)
- Establishing "ground rules" for how groups operate (Hattie, 2017).

Individual Accountability

Learners should feel responsible for their own learning and the learning of the group. To do this, teachers should monitor the learning of each learner. This could be done by:

- Testing and assessing learners individually.
- Randomly allocating learners to share back the wider class after group work.
- Monitoring groupwork and asking questions of individual learners to check understanding.
- Include time for learners to self-reflect on their learning and group contributions.

Group Reflection

Each time learners engage in co-operative learning group work is an opportunity for them to learn about working in a team and reflect on their learning. This might involve asking questions such as:

- How well did learners achieve their goals or their final product?
- How well did learners work together?
- What helped in the running of the group?
- What were some of the problems the group faced?
- How might the group function better in the future?

Include time for learner to self-reflect on their learning and group contributions.

Small Group Skills

Skills for effective group work need to be taught. These skills sit in two categories - skills for learning and interpersonal skills.

- How do we teach these skills?
- Teacher-modelling and learner practicing.
- In context

Face-to-face Interaction

Groups need to be "eye to eye and "knee to knee".

Fostering an environment where learner are encouraging, listening, questioning, explaining, challenging with, and to, each other.

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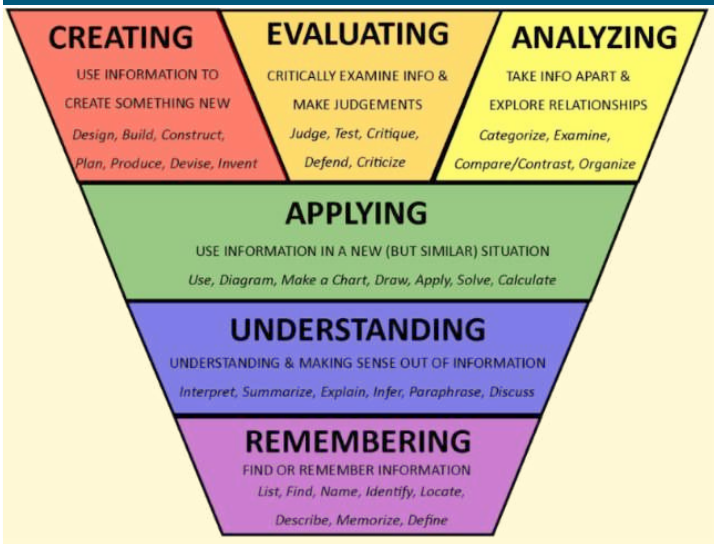
AKO STRATEGIES - DEVELOPING HIGH QUALITY LEARNING INTENTIONS

"There is a need to make clear to students the type or level of performance that they need to attain, so that they understand where and when to invest energies, strategies and thinking and where they are positioned along the trajectory toward successful learning. In this way, they know when they have achieved the intended learning. Effective teachers plan effectively by deciding on challenging goals and then structuring situations so that students can reach those goals."

Hattie (2012)

Developing high-quality learning intentions (Hattie, 2012):	
Characteristics of high-quality learning intentions.	- Clearly stated. - Brief. - Observable. - Statement of behaviour. - Distinct. - Written in language learners understand. - Shared in advance.
Guidelines for developing learning intentions.	- Limit the number of intentions; keep them related to the key ideas the lesson is focused on. - Do not try to assess everything on every task. - Remember that smaller, less significant tasks typically require fewer criteria.
Questions to ask when evaluating learning intentions.	- Do the intentions make sense? - Can you distinguish one from another? - Can you envision examples of each? - Are they all worth assessing? - How will they be assessed?

Bloom's taxonomy (1956)



Bloom's taxonomy of educational objectives identifies different cognitive domains associated with levels of learning.

Bloom's is hierarchical, meaning that learning at the higher levels is dependent on having attained prerequisite knowledge and skills at lower levels.

High quality learning intentions directly consider Blooms taxonomy as they are developed.

Image: National Improvement Hub – Education Scotland 'Bloom's Revised Taxonomy Planning Tool' Adapted from the National Centre for Excellence in the Teaching of Mathematics, UK.

A routine to consider - adapted from Randall (2020)

1. Learning intention statement constructed using active verb, specific to skill, knowledge, or understanding and written in developmentally appropriate language.
2. Unpacking of learning intention with class at the beginning of class.
3. Constantly displayed during class.
4. Use of examples and learning connected to learning outcome.
5. Use of performance of understanding (what learners are doing, saying, making, doing, or writing) to link to learning intention.
6. Learning related to the learning intention is formatively assessed during lesson.
7. Progress related to the learning intention is reviewed with the class at the end of the class.

High-quality learning intentions should:

Focus on the end-product.
What should learners know or be able to do at the end of the lesson or sequence of lesson?

Avoid vague or fuzzy terms.
Example: “we are learning about diverse perspectives”
Better: “we are learning about the perspectives of three diverse groups from the Amazon”

Appropriate level of specificity
Too broad: “We are thinking critically”.
Too specific: “we are learning how to think critically to achieve excellence in the final task in our 3.1 assessment”
Better: “We are analysing and evaluating perspectives relevant to the Amazon”

Learning intentions are an <u>input</u> in curriculum design and lesson delivery. They directly inform success criteria.
They serve an essential purpose in helping the learners in our class understand what they will be learning and how they can make progress.

Informed by Hattie 2012 and Bishop, 2019

They are a signal to learners: “Where am I going?”
They are statements that explicitly describe what learners should **know, understand, or be able to do** as a result of teaching and learning.

- to understand
- to know
- be able to do.

Learning intentions identify new learning and focus on transferable skills.

Archer, 2018

Effective learning intentions are:

- **Clear:** In terms of content and language, learning intentions must be crystal clear for every member of the class.
- **Specific:** The teacher and learner know exactly what needs to be learned and how
- **Desirably difficult:** The level of challenge provided by the learning intentions should be desirable for all learners.

Informed by Hattie 2012 and Bishop, 2019

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AKO STRATEGIES - EFFECTIVE FEEDBACK

Effective feedback answers three questions:
Where am I going?
How am I going?
Where to next?

Hattie and Timperley, 2007

"Learners want to learn, but they want to do so in a context where they are not embarrassed, where feedback is normal and not something to be feared, where they are not singled out from their peers, and where achievement is a common goal."

Russell Bishop, 2019

Feedback: What it should look like (Hattie and Clark, 2019)

Effective	Ineffective
- Feedback addresses task goals directly. - Draws attention to positive elements of performance. - Refers to changes from previous performance. - Element of self-assessment by learners. - Processing: focus on learning processes needed to understand and perform task.	- Learners do not understand the task goals or success criteria. - Solely focused on errors (includes punishment). - Focused on comparison with other learners, or marks and grades. - Reliance on extrinsic rewards. - Comment on personal qualities that provide little information about processes or performance.

Types of feedback/ feed forward (Bishop, 2019)

Types of feedback/ feed forward	Main feature	Includes	Example provided by more knowledgeable other	Example provided by self
Task/product (corrective feedback)	Feedback is aimed at whether the work is correct or incorrect.	Directions to acquire more, different, or correct information and building more surface knowledge.	"That's not quite correct yet. Your paragraph does not yet match the criteria for what makes up a paragraph."	"My answer is not correct yet. I checked it against the criteria for what makes up a paragraph."
Process	Feedback is aimed at the process used to create a product or extend or to complete a task.	Feedback provided on the means of processing information, learning processes regarding understanding, or completing a task, detecting errors or error correction.	"You need to expand the sentences so that they cover all the parts you have signalled in the topic sentence. Then you will have produced a paragraph that matches the criteria."	"I need to check to see if my paragraph matches the criteria that we established at the start of the lesson. I will check to see if I have covered all the dimensions and will add any that I have missed."

Self-regulation (the metacognitive attribute of the task)	Feedback is aimed at improving learner's self-evaluation or confidence to engage further on a task.	Feedback includes: Learners gaining greater skills or confidence to engage further in a task. Developing capability to create internal feedback and to self-assess. Developing the willingness to invest effort into seeking and dealing with feedback information. Increasing the degree of confidence or certainty in the correctness of the response. Identifying the attributes of success or failure. Enhancing the level of proficiency at seeking help.	**"**What happened when you checked the paragraph against the criteria we developed at the outset of the lesson?" "Is there a match? If not, how can you explain the difference? And how would you rectify any omissions?"	"I think I could expand on the sentences I have provided by sticking more closely to the structure I signalled in the original plan." "I can improve on the quality of these sentences by offering more elaboration of the main points and providing examples for each main point."
Personal/behaviour	Feedback is aimed at personal attributes and behaviour, rather than at the task or the process.	Feedback to the person, their behaviour, and aspirations for praise.	"Well done. You are an excellent student". "Your behaviour is excellent."	"I am behaving as expected by my teachers and my peers."

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AKO STRATEGIES - EFFECTIVE QUESTIONING AND THINKING APPROACHES

Effective questioning improves the ability of learners to identify similarities and differences. It can be used to Inspire deeper intellectual thought and promote learner-to-learner interaction.

Effective Questioning strategies that promote noticing and linking		
Who…	does this help? does this hurt? makes decisions about this?	talks about this issue? knows about this area? is most directly affected?
What…	is your main point? would be an example? other information do you need? do you know for sure? are you uncertain about? evidence do you have? does it make you wonder? questions do you have?	are you assuming? would change your mind? do you think the main issue here is? has been done in relation to this in the past, and has that worked? do you see? is going on here? might happen next?
Where…	do we see this happen? are similar situations? is the most need for this?	are the places that this doesn't happen? should we go for help with this?
When…	does this happen? doesn't this happen? would it cause a problem?	has this occurred in the past? did it improve? would we know if we had made a difference?
Why…	do you think that is true? is this relevant?	should people know about this? should people care? do you think this happens?
How…	do you know? does…. relate to….?	will we know if it improves? will we know if it gets worse? does this apply to this case?
Why not…	consider if you could wave a magic wand and change all of this – what would happen?	consider if you were totally wrong about this or the reverse of what you think was true - what would that mean?

Tips and Techniques for classroom use:

"No hands" policy. Plan questions before the lesson.	Introduce wait time. Encourage learners to each other questions	Use open and closed questions. Don't dismiss answers.

A selection of activities /tasks that improve Thinking and Logic:

- Gradually zoom out from a picture. Ask learner to consider what they see.
- Show pictures, paintings, data tables, stories or graphs and ask: What do you see? What do you think is going on? What does it make you wonder?
- Learner go to a corner of the room representing a different response to a contentious issue. Ask learners to explain their reasoning.
- Write headlines to summarise key ideas from a story or content being taught.
- Inner group – discuss ideas; outer group – listen carefully to discussions. Roles reversed so all learners are participants and observers.

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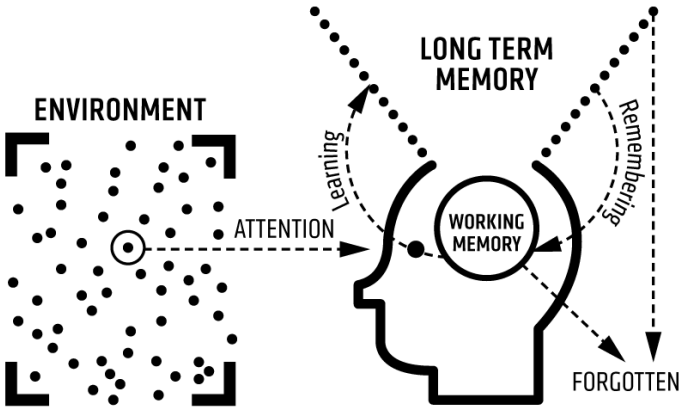
MAHARA – AN OUTLINE

Teaching for memory - learning is a change in memory. Teaching supports that change.
Exceptional learning means learners being able to remember, retrieve and use learning. It also ensures learners develop strong process recall. Understanding how the brain learns allows us to ensure that we teach in such a way that supports transition to long term memory and strengthens the ability of our learners to retrieve and utilise what they have learnt and how to use it. Reducing cognitive overload by reducing distractions, presenting new learning in chunks and, developing retrieval strength all assist us in this principle.

Mahara and cognitive load theory
The principle of Mahara is mindful of Cognitive Load Theory (CLT). CLT allows us to understand how the brain encounters new information, how that information enters the working memory and, finally, how that information is either forgotten, or is moved into long-term memory. The brain pays attention to some of what it perceives in the environment around it. From that attention, 5-9 chunks of information can be held in the working memory at once. This is where the brain can use it. The lifespan of information in the working memory is brief. For learners to be able to recall past learning, it must enter long-term memory. For this to happen, and for the learning to be easily accessed from the long-term memory, processes of learning and remembering must occur.

Implications of Cognitive Load Theory on Mahara

- Working memory is limited compared to long term memory.
- Working memory decays rapidly.
- Present new learning in small chunks.
- Be mindful of overload.
- Novices and experts think differently.
- Cognitive load is higher for novices.
- Multiple encounters with learning are needed to move it to long-term memory.



Adapted by Oliver Caviglioli from Daniel Willingham's 'Simple Model of the Mind', 2009

Teaching for memory - learning is a change in memory. Teaching supports that change.
Mahara is about knowing the ways in which our learners learn and remember and teaching in such a way to support this. Mahara is about being mindful of cognitive load, the classroom environment, and working and long-term memory. As teachers, we have Kaitiakitanga for supporting our learners to learn and remember.

Implications for Mahara

- Working memory is limited compared to long term memory.
- Working memory decays rapidly.
- Present new learning in small chunks.
- Be mindful of overload.
- Novices and experts think differently.
- Cognitive load is higher for novices.
- Multiple encounters with learning are needed to move it to long-term memory.

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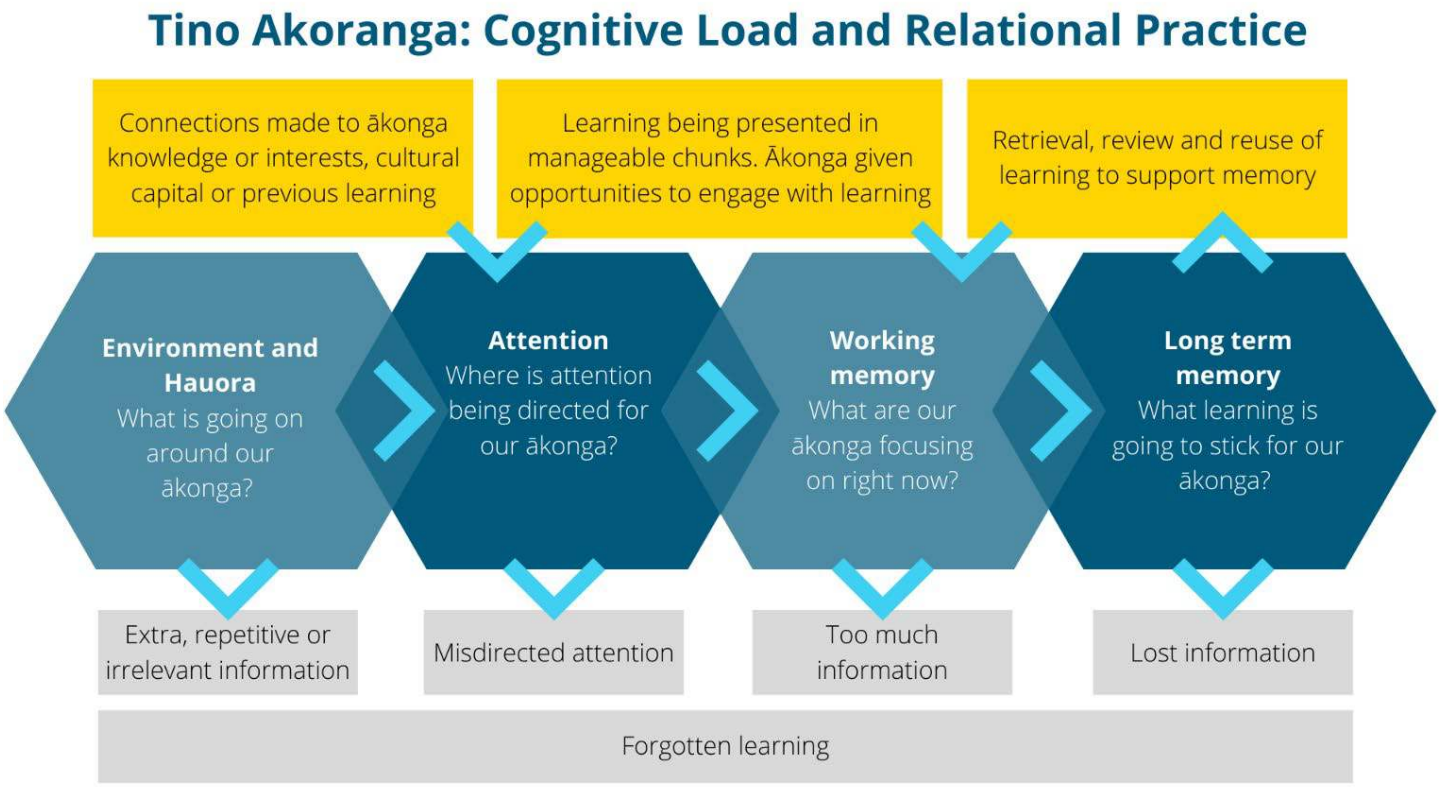
Ignite, Chunk, Chew, Review

Adapted from 'Culturally Responsive Teaching and The Brain' by Zaretta L. Hammond

Instructional Strategy	Ignite	Chunk	Chew	Review
What it means	Get the brain's attention.	Make information digestible to the learner.	Actively process new information.	Provide opportunities to apply new learning .
Rationale	We cannot remember or understand what we do not give our attention to. This increases cognitive capability in the short term. This reduces cognitive load.	The brain can only hold a certain amount of information for processing at a time. This reduces cognitive load.	The brain needs processing time. It cannot be continually receiving new input. This reduces cognitive load.	To consolidate the transfer to long term memory, new learning needs to be applied. This reduces cognitive load.
Goal	Cue the brain to pay attention.	Provide information to be learnt in "chunks" appropriate to the learner.	Help the brain to process new information and support the transfer to long-term memory.	Reinforce the transfer to long-term memory.
Examples	Storytelling, call and response, a powerful quote/statement/image/ video, connecting to prior learning.	Completing tasks part by part, breaking up teacher talk or reading something aloud into sections.	Thinking, mind-mapping, or writing about new information, answering questions, verbal and written responses, scaffolded discussion.	Revisiting concepts and learning within a short time frame. Applying the learning to a new task. Creating, writing, solving a different kind of problem.

CONNECTING MAHARA TO TINO AKORANGA



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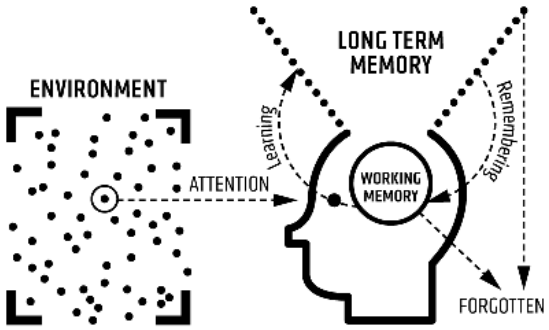
MAHARA IN PRACTICE – MOVING FROM NOVICE TO EXPERT

In Te Reo Māori, *mahara* means 'to think, thinking, thought'.

"There is clear value in teachers being trained in cognitive science principles—undertaking professional development and learning in the area—and their application in the classroom."

Perry, T., Lea, R., Jørgensen, C. R., Cordingley, P., Shapiro, K., & Youdell, D. (2021). Cognitive Science in the Classroom. London: Education Endowment Foundation (EEF).

Cognitive Load Theory



Adapted by Oliver Caviglioli from Daniel Willingham's 'Simple Model of the Mind', 2009

Cognitive load is different for experts and novices. Novices require greater guidance and more directive instruction.
What is intuitive for an expert is often confusing for a novice. Novices are more prone to cognitive overload. Novices benefit most from explicit, direct instruction with guided practice and relevant feedback.

Becker & Gersten, 2001; Stockard et al., 2018

When we think, we draw on…

The environment	Working memory	Long term memory
The environment represents everything outside of our minds. It is the Internet, books, magazines, knowledge readily shared by others, and more. The key thing to know about the environment is that it is an unlimited external store of information.	Working memory is the site of the consciousness, the parts of memory where all thinking takes place. The capacity of working memory is limited to somewhere in the vicinity of four and seven elements of information.	Long term memory is where all our memories are kept. This includes memories of life events, factual knowledge, and memories of process. As far as researchers are aware, there is no limit in long term memory.

Novice learners	Expert learners
Little relevant background knowledge.	Lots of relevant background knowledge.
Relies on working memory.	Relies on long-term memory.
Lacks effective mental representations of successful performance.	Has a clear mental representation of successful performance within a domain.
Has not automatised necessary procedural knowledge.	Necessary procedural knowledge has been automatised.
Problem solving requires following clear steps.	Problem solving is intuitive.
Sees superficial details.	Sees underlying structures.
Learns little when exposed to new information.	Learns a lot when exposed to information about which they are already knowledgeable.
Learns best through explicit instruction and worked examples.	Learns best through discovery approaches.
Is more likely to experience cognitive overload as attention is swamped by new information.	Is unlikely to experience cognitive overload as attention is buttressed by memorised 'chunks' of knowledge.
Struggles to transfer principles to new contexts.	Is able to transfer principles between related domains.

Adapted from David Didau, 2019

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MAHARA - THE ZONE OF PROXIMAL LEARNING, AND NOVICE AND EXPERT LEARNERS

The Zone of Proximal Learning
The Zone of Proximal Learning is defined as the space between what a learner cannot yet do without assistance, and what a learner can do without assistance. The space in between being where a learner is able to experience a combination of challenge and success, either with adult guidance or in collaboration with peers.

Vygotsky, 1934

Novices and experts experience learning very differently. If as teachers we fail to adapt our approach to our changing learner (and their changing cognitive load) we run the risk of leaving learning unsecured, becoming never-ending spoon-feeders, and fundamentally disempowering a learner and their academic potential.

Adapted from Didau, 2019

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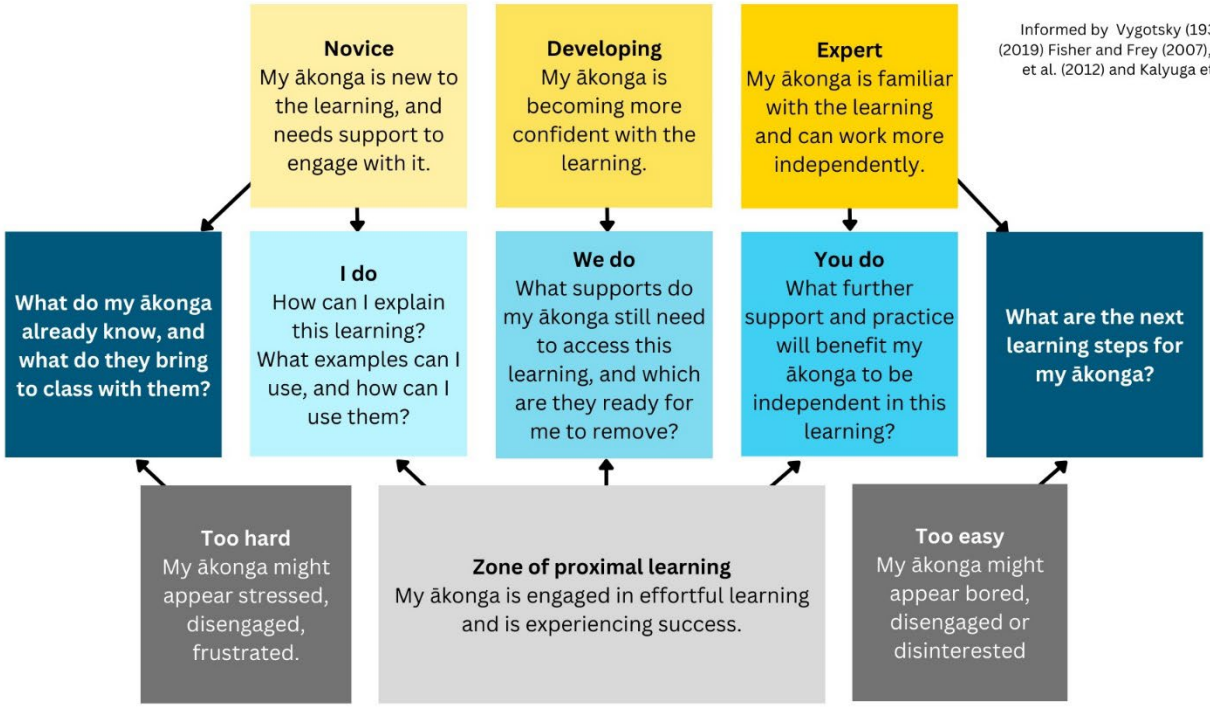
MAHARA, SCAFFOLDING, AND THE ZONE OF PROXIMAL LEARNING



L. Wing, 2023

Keeping learning in the Zone of Proximal Learning

The challenge to our practice is to adapt to the changing needs of the learner, keeping the learner in Vygotsky's 'zone of proximal development'. This is done through consideration of how learner learn as they move from novice to expert, and the adding and removing of supportive scaffolding as learner progress.

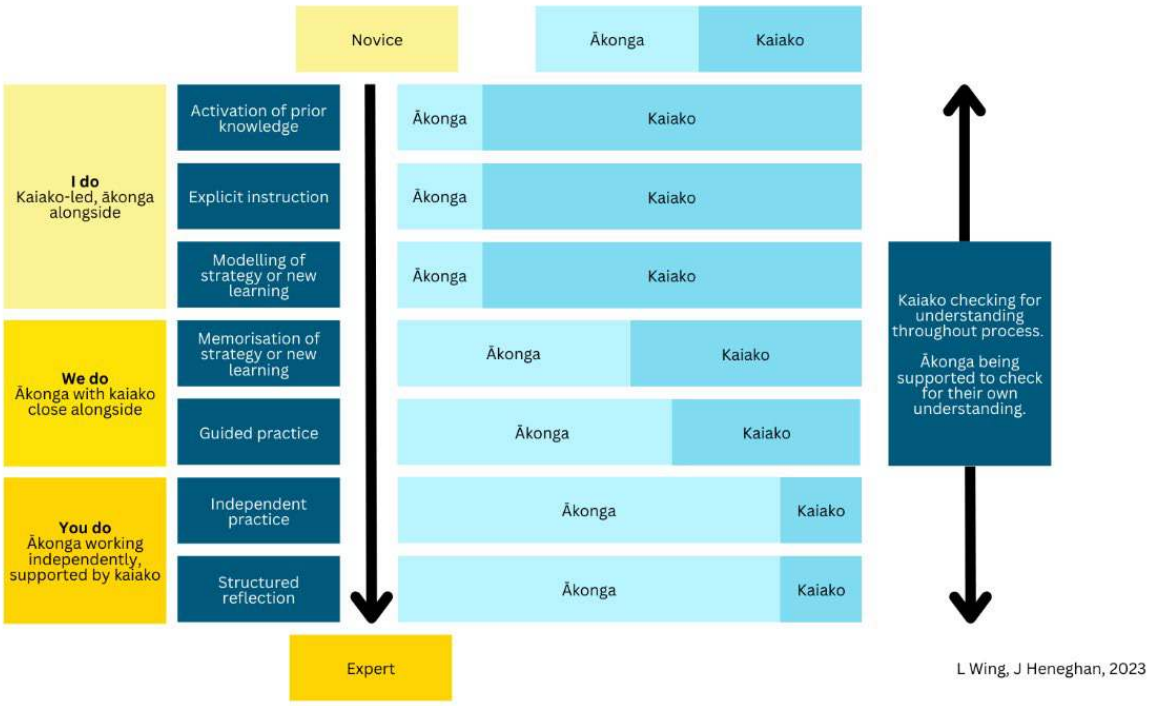
Specific strategies that support this include:

- Activating prior knowledge.
- Explicit instruction.
- Using examples effectively.
- Guided practice and fading approaches.
- Retrieval practices.
- Summarising.
- Visualisation using mapping.
- Student self-testing.
- Peer teaching.

These approaches being secured by regular checking for understanding.

MOVING FROM NOVICE TO EXPERT: I DO, WE DO, YOU DO

Adapted from Bollinger et al. (2012) and Quigley, A., Muijs, D., and Stringer, E. (2021)



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MAHARA – AN INTRODUCTION TO NEURODIVERSITY

What is neurodiversity? *Neurodiversity is the idea that people experience and interact with the world around them in many ways, with some of these ways being based on differences in brain function and organisation.*

Our why:
Our values as a school: Care, Respect, Community, Creativity
Our strategic direction: 'A culture of wellbeing and care', 'Diversity, Equity, and Inclusion', 'Exceptional Learning', and 'Connections, Relationships, and Partnerships' – this learning spans our strategic plan.
The Universal Rights of the Child describe that all children should "have access to education and health care, grow up in an environment of happiness, love and understanding have protection from discrimination of any sort, and be supported to develop their personalities, abilities and talents.
But our biggest why? Our learners.

Neurodiversity: An Umbrella
You will be aware that a myriad of learning conditions exist, sitting under the umbrella of *neurodiversity.*
Some groups choose to describe neurodiversity as a metaphorical umbrella, with subcategories such as developmental, acquired, physical health and mental health acting as ways of making connections between some of the diversities.
In our Kura, we have learners who have neurodiversities that include (insert here)
Some learners will have multiple Neurodiversities.
The array of labels that exist can be daunting.
Being an expert in all is challenging.
An additional challenge is the premise that sometimes, a label, is just a label – each learner is different.

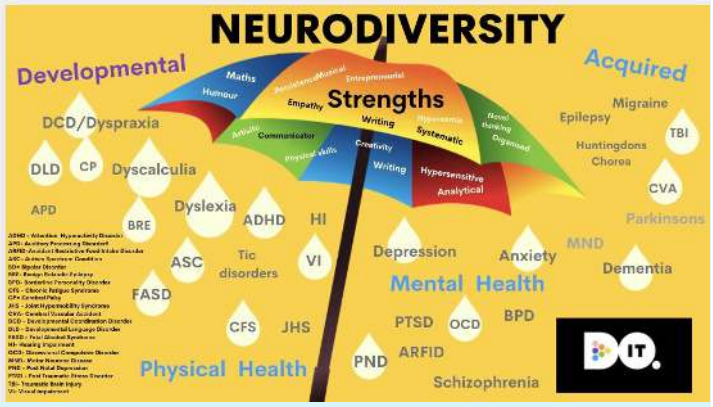


Diagram: Kirby, A (2021)

Summaries of neurodiversities

<u>Communication and interaction</u> Speech language and communication needs (SLCN) - Where learners have difficulty communicating with others. Autistic spectrum disorder (ASD) - where learners are likely to have difficulty with social interaction.	<u>Social, emotional and mental health</u> (SEMH). A broad category where learners may experience a wide range of social and emotional difficulties, including disorders such as attention deficit disorder or attachment disorder.
<u>Cognition and Learning</u> Moderate learning difficulty (MLD)- where children learn at a slower rate than their peers. Severe learning difficulty (SLD)- where cognition difficulties are compounded by associated difficulties with mobility and communication. Profound and multiple learning difficulty (PMLD)- where learners are likely to have severe and complex learning difficulties, often in addition to physical disability or sensory impairment. Specific learning difficulty (SPLD) where learners are affected by one or more specific aspects of learning such as dyslexia (reading and writing difficulties) common discount clear (numerical difficulties closed parentheses and dyspraxia (movement difficulties).	<u>Sensory and/ or physical needs</u> Hearing impairment Visual impairments Multi-sensory impairments- where learners have a combination of vision and hearing difficulties. Physical disability- where learners require additional ongoing support and equipment to access education.

Labels: Navigational tools, Not the Destination

"for those on the margins of mass education system a quest for characterization and labelling still exists- as does the vagueness of labels, especially in establishing what they mean in educational contexts. At a conceptual level, labels about learning need highlight the perceived typicality of a group but they do not illuminate the individual difference and disposition within a group. In terms of understanding individuality, labels are more about navigation than destination".

Tim O'Brien (2018)

There is a need to balance the need to understand specific neurodiversity without living in the label.

There is a need to respond to the complexity while at the same time teaching in a way that supports all learners.

Deficit Theorising

Deficit theorising is about attributing a lack of success to a particular aspect of a learner, without considering the role of our own actions, or making efforts to intervene in the lack of success. Deficit theorising is about making excuses.

It can be applied to our neurodiverse learners as well as other groups. It is worth noting the intersectionality between neurodiversity, and other marginalised groups.

Deficit theorising can limit our learners from achieving their full potential, and indeed from having their rights met under the UNCROC.

Countering Deficit Theorising

What we can do:

- Ensure that you know the learner and how they learn, using a range of sources to inform that knowing.
- Create an inclusive learning environment supported by a classroom Tikanga that is understood by all.
- Use scaffolding effectively to support learners to engage and learn.
- Know my subject, how it is learnt and how best to teach it.
- Combine effective 'teaching all' approaches, with effective 'teaching some' approaches.
- Work effectively with Teacher Aide supports.

This should be underpinned by:

- Talking to the learner and home about their learning
- The use of relational formative Assessment strategies to know the impact of approaches
- A consideration of cognition and cognitive load theory
- An ongoing challenging of deficit-theorising

Inclusive Teaching

'Inclusive teaching' is the concept of combining high-quality teaching and learning, provisioned to the whole class, with carefully and considered episodes of one-on-one or small group interventions to access all or some of the learning.

This approach ensures:

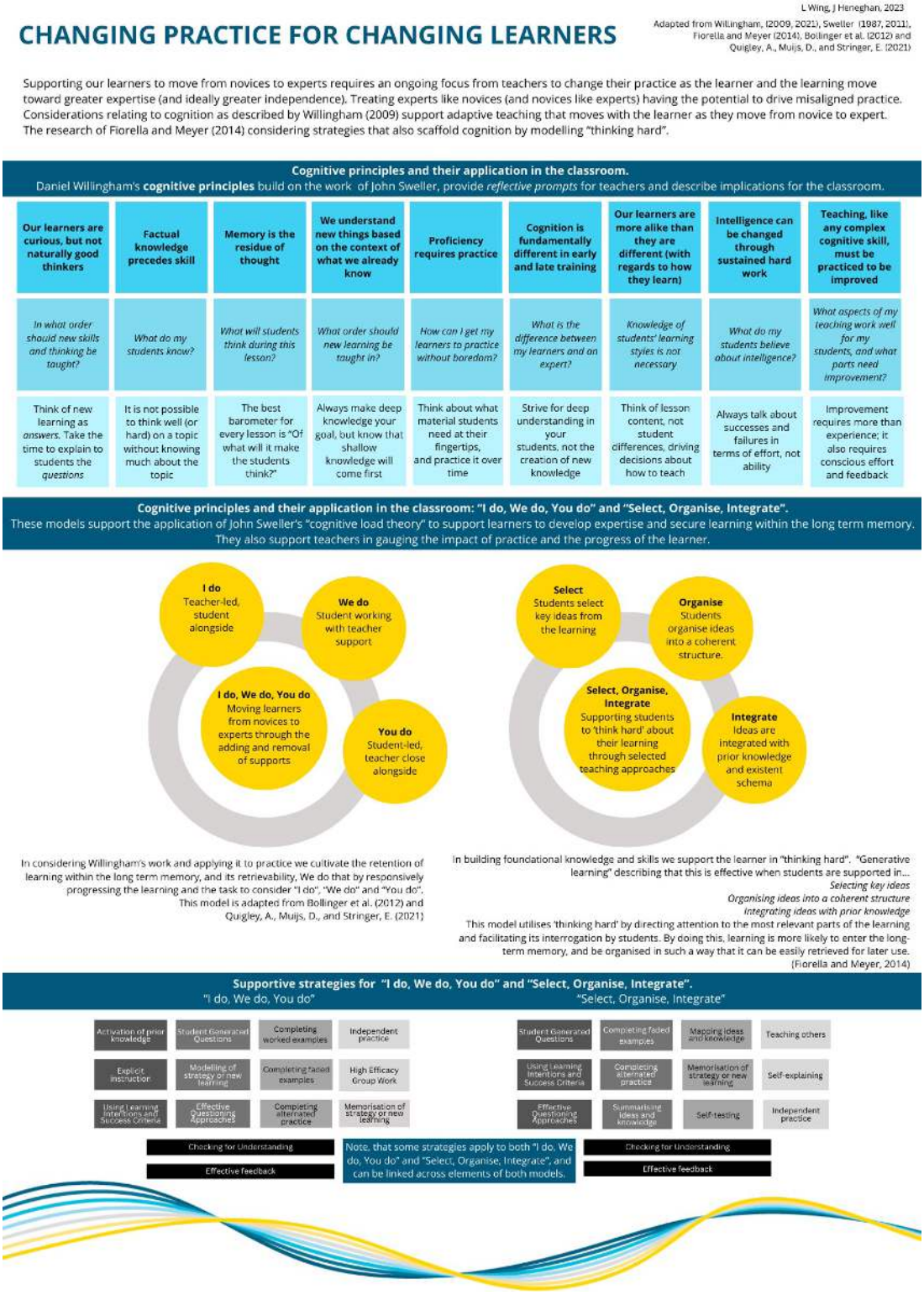
- All learners benefit from quality teaching and learning
- Appropriate support is given where needed
- Learners are supported to engage in the wider learning of the class, instead of completing something entirely different.

Here are some questions to ask yourself around teaching inclusively:

- Am I interspersing high-quality teaching with small group and/or one on one interventions?
- Are my learners getting the opportunity to practice?
- Am I considering the learner beyond the label?
- Am I challenging and rejecting deficit-theorising?
- Am I familiar with the IEPs of my learners that have them, and using the IEPs to inform my teaching approaches?

MAHARA - CHANGING PRACTICE FOR CHANGING LEARNERS

Tom Sherrington describes thinking as “needing some management if it is to engage all students’ curiosity in a helpful direction”. That management needing to adapt to the learner, the learning and the subject, and forming the foundational steps for a learner in their journey from novice to expert. The adaptive routines underscoring that management can also develop a student’s ability to think deeply, and as Logan Fiorella and Richard Meyer describe: “think hard” about their learning.



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MAHARA STRATEGIES - EXPERTISE REVERSAL EFFECT

Instructional techniques that work well for novice learners can become ineffective for experienced or expert learners. This is called the Expertise Reversal Effect.

As learners become more adept, they no longer require the instructional scaffolding we would have applied earlier, and as such, these scaffolds become extraneous. Instead, learners are able to rely on the knowledge they have already stored in their schema to solve problems (Sweller et al, 2019).

Expertise reversal also prevents further mastery, as focus is limited to the learning or set process as defined by us, as opposed to allowing the learner to master and develop their own metacognition of whatever learning or process it is. Instead, working memory is spent trying to get the two ways of doing – theirs and yours – to work in alignment (Kalyuga et al, 2003). Imagine learning to swim. Initially, the early swimmer needs a lot of support. Over time, scaffolds such as flutter boards and water wings must be removed to allow the swimmer to swim not just independently, but also with speed.

Identifying Expertise Reversal Effect

- What is formative assessment telling me about the mastery levels of my learner?
- Can learners articulate the process or learning independently?
- Are learners bored, frustrated, disengaged or disinterested?
- Are learners attempting to do away with provided scaffolding, or becoming frustrated with it?

Combatting Expertise Reversal Effect

- Consider what scaffolds are really necessary, even for novice learners. Do away with superfluous scaffolds, as they will simply add to working memory 'noise'.
- Plot out what scaffolds are needed, and not needed and when, based on your own knowledge of learner progress from novice to expert.
- Remove redundant guidance from resources as mastery increases. Use formative assessment to gauge readiness.
- Fade scaffolding over time, paying close attention to the success rate of learners following each fade.
- Allow for 'productive struggle' – some challenge for learners is essential as they learn to cope without the scaffold over time.

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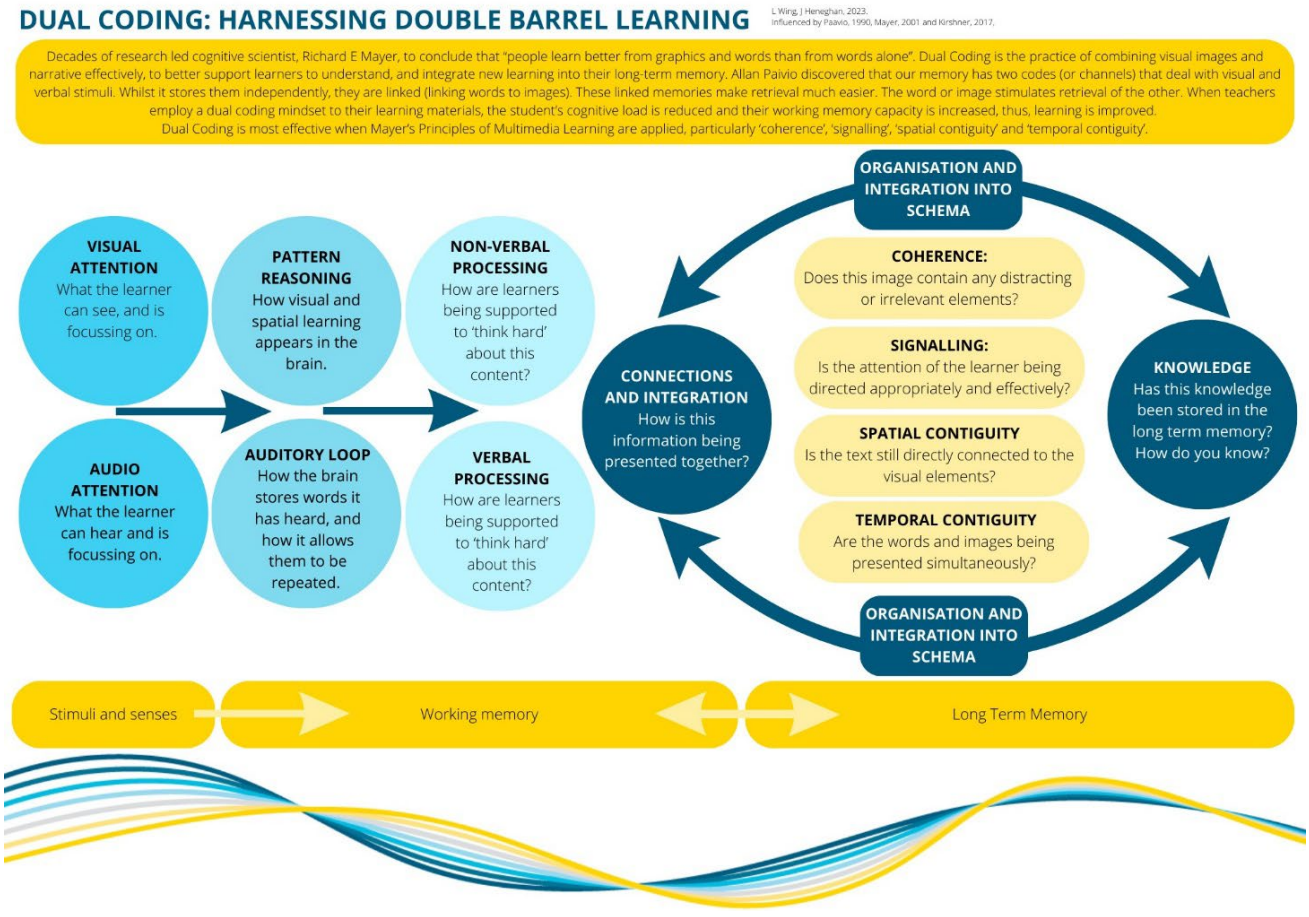
MAHARA STRATEGIES - DUAL CODING

Decades of research led cognitive scientist, Richard E Mayer, to conclude that "people learn better from graphics and words than from words alone". Dual Coding is the practice of combining visual images and narrative effectively, to better support learners to understand, and integrate new learning into their long-term memory.

Humans have separate channels in which they receive and process visual and verbal stimuli. Separate and independent as they may be, they nonetheless also managed to relate to another in a way that Paivio described as "associative links". (Paivio, 1990).

These connections provide the doubling of encoding power, described by Paul Kirschner (2017) as "double barrel learning", with these connections maximised when Mayer's Principles of Multimedia Learning are applied, particularly 'coherence', 'signalling', 'spatial contiguity' and 'temporal contiguity'.

Fully exploiting the impact of dual coding in the classroom (Mayer, 2001)	
The coherence principle: students learn more effectively when the visual used doesn't contain any distracting, irrelevant elements. This is the most straight forward of the principles, the easiest to implement and the one with the biggest impact.	The signalling principle: this entails the explicit pointing to specific parts of a visual being explained either in writing or speech. Failure to do this results in students wasting their valuable and limited cognitive resources in searching.
The spatial contiguity principle: similar to cognitive load split attention effect, this requires that text is not separated from the visual it is referring to.	The temporal contiguity principles: narratives related to visuals should be coordinated to avoid a student having to keep in mind either the visual whilst listening to the narrative, or vice versa.



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MAHARA STRATEGIES – ADDRESSING REDUNDANCY AND THE SPLIT ATTENTION EFFECT

Providing too much information adds to extraneous load, reducing load that can be used to process new learning and information (Ashman and Sweller, 2023). It is similar to Chandler and Sweller's 'Split Attention Effect', described in 1992, where extraneous load is increased through task design and ineffective resource creation. This could include the need for learners to interpret information from multiple locations to understand an idea or process.
For both, the brain becomes occupied by a focus on interpreting additional, superfluous information.

With learners where working memory is reduced, the overflow of information, or requirement to move back and forth can be overwhelming.
"Redundant information presented through audio and visual channels can inhibit learning for individuals diagnosed with ADHD, who may experience challenges in the processing of information through visuospatial and phonological loop channels in the memory system" (Victoria Brown, et al 2016).

Redundant information can include:

- Written text alongside a diagram
- Decorative images that do not provide useful information.
- The same information being presented as verbal and written text simultaneously.
- Using animated images when still images are avaliable.

Split-Attention Effect could include:

- Learners needing to review a range of pages, physical or digital to understand and/or complete a task or process.
- An exemplar with a separate, non-integrated commentary about what it shows. Learners then needing to flick between the exemplar and the commentary.
- A diagram with separate captions.

Redundancy can be addressed by:

Removing unnecessary text from diagrams
Avoiding irrelevant decorative items
Being mindful of presenting information visually and audibly at the same time (particularly relevant for learners with ADHD, and APD)
Giving reading time ahead of explanations
Using still images where possible, instead of animations.
Keeping explanations short and simple where possible.
Training learners to direct attention using pointing (online and offline) – Zhang et al, 2022-3.

Split attention can be addressed by

Diagrams and explanations being integrated together.
When producing worked examples, include both the example and the step itself.
When producing exemplars, provide parallel, integrated explanations of why elements of the exemplar are included – don't leave this information on a separate page to flick between.
Use one integrated reference text at a time, as opposed to multiple sources.

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MAHARA STRATEGIES - INTERLEAVING

Interleaving is weaving alternating approaches, e.g. types of questions, or ways of presenting information. It can be contrasted with blocking, which would involve teaching the same information, or types of information in succession.

Interleaving can involve:
Visual examples
Verbal examples
Short tasks or problems.
It is still a subject of academic research and as such, further possibilities for interleaving likely exist.

Benefits of Interleaving

- Interleaving supports the fostering of 'desirable difficultly' – that is to say, learners have to think a little more than they would if the questions were all the same (Bjork and Bjork, 2011).
- Interleaving also helps learners become more confident in what something is and is not. This can be called 'contextual inference' (Battig, 1979, Firth, 2023). This includes supporting inductive reasoning, where learners become more skilled at judging whether or not a novel example fits within a certain schema, as well the eventual development of category knowledge, where learners can describe a range of examples from broader categories.

Interleaving – Implications for practice
Know what your learners already know, and apply your interleaving carefully based around this knowledge.
Verbally and visually show how new learning is the same and different to previously taught learning. This is helpful for black and white thinkers.
Similarity matters – don't go too far away from the initial focus as this will create confusions.
Time scale matters – don't let the gaps get so big that the examples no longer have coherence.
Follow the interpolation, extrapolation, stipulation process:

- Interpolation: using examples that fall within a continuum-like range to support learner to make inferences.
- Extrapolation: using examples that go beyond the range of the concept or skill being taught to challenge learner to apply learning to new material or in a new way.
- Stipulation: presenting a wide range of similar examples and non-examples to support learner to generalise.

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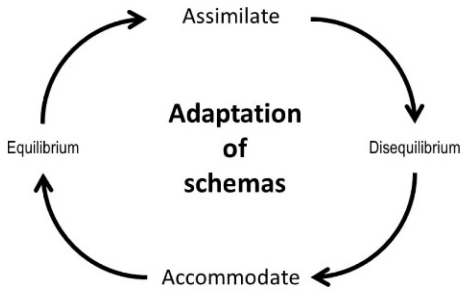
MAHARA STRATEGIES – ACTIVATING PRIOR KNOWLEDGE

"Prior knowledge is defined as the whole of a person's actual knowledge, available before a certain learning task, structured in schemata, declarative and procedural, partly explicit and partly tacit, and dynamic in nature".

Christian Tarchi, 2015



What is a schema, or what are schemata? According to Piaget (1952), they are "A cohesive, repeatable action sequence possessing component actions that are tightly interconnected and governed by a core meaning" Schema are adapted over time by new information being integrated into existing networks.

Piaget 1952; Wadsworth, 2004

Why activate prior knowledge?
To spark interest – engages learners with the learning.
Reduces cognitive load – preloads schematic connection.
Strengthens retrieval strength (how easily it can be used), and storage strength (how long it stays in the brain).

Activating Prior Knowledge through Questioning	**Examples of knowledge activation questions**
Use a series of questions with increasing complexity designed to draw out thinking. Prior knowledge is drawn out gently. Shut down is prevented as learners are scaffolded towards and through recall. Use at the start of a lesson, ahead of explicit instruction, or completing a reading task. Methods could include structured discussion, paired conversations, He Mahi/Do-now/starters, think-pair-share.	Have you ever…? What do you know about…? What can you remember about…? What do you do when…? Why might you…? What are the most important parts of…?

'The Effects of Prior Knowledge and Schema Activation Strategies on the Inferential Reading Comprehension of Children with and without Learning Disabilities' Sonya C. Carr and Bruce Thompson. *Learning Disability Quarterly, 1996.*

Activating Prior Knowledge through Type A and Type B multiple choice questions

Learning that has not been accessed recently, but was learnt well previously is 'high storage, low retrieval' or 'marginal'. Multiple choice questions provide cues as well as productive struggle to access this learning.

These questions can be **Type A** or **Type B**

Type A questions have a strong relationship to previous learning – taught in the course.
Type B questions have tangential relationship to prior learning, but clues are given in the answer choices.

Writing a multiple-choice question

1. Multiple choice questions should contain a stem, the question, and the correct answer and distractors as well as other plausible options.
2. Ensure the question is clear, specific, and desirable in terms of difficulty.
3. Ensure the incorrect options ('distractors') are plausible options.
4. Keep it clear.
5. Keep it specific.
6. Take care using "none of the above".
7. Consider including the option "I don't know yet".

How to write Type A and Type B Multiple Choice Questions

1. Consider something that is sequentially taught over two or more years.
2. Consider what is generally 'forgotten' between years, and what is retained.
3. Write one or more multiple choice questions, using content that the learners will be familiar enough with based on their prior learning.
4. Write one or more multiple choice questions using information that are related to previous learning, but more relevant to the new teaching.
5. Use results to guide further teaching and learning.

'Activating prior knowledge using multiple-choice question distractors' Schimmelfing, Liza C.; Persky, Adam M. Medical Education, 2006

Activating prior knowledge through 'Hot Potato'

This is a strategy that uses prompts to facilitate thinking and prior knowledge activation. The prompts can be questions, or visuals, or something else such as a practical demonstration.

To prepare:
Have a series of questions or prompts paired with A3 paper and different colours of pens.
Set groups, three or four being optimal. Each group will need a different colour of pen.
Each group begins with a piece of paper, they answer onto that paper, before it is moved onto the next group. The new group reads the previous answers and adds in new ideas.
The final round should involve sharing back to the wider class.
NOTE – there is a need for checking for misconceptions, clear expectations, and proactive monitoring. Group roles can be highly supportive here.

This strategy works well at the start of a sequence of learning.
This strategy provides a chance for learners to share with others what they know – cooperative and affirming.

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MAHARA STRATEGIES – EXPLICIT INSTRUCTION – THE FUNDAMENTALS OF USING EXAMPLES

Explicit instruction is a specific type of direct instruction that emphasises clear and direct explanations and modelling of the material being taught. Both direct and explicit instruction involve a teacher-centred approach in which the teacher is the primary source of information for the learner. (Boxer ed, 2019).

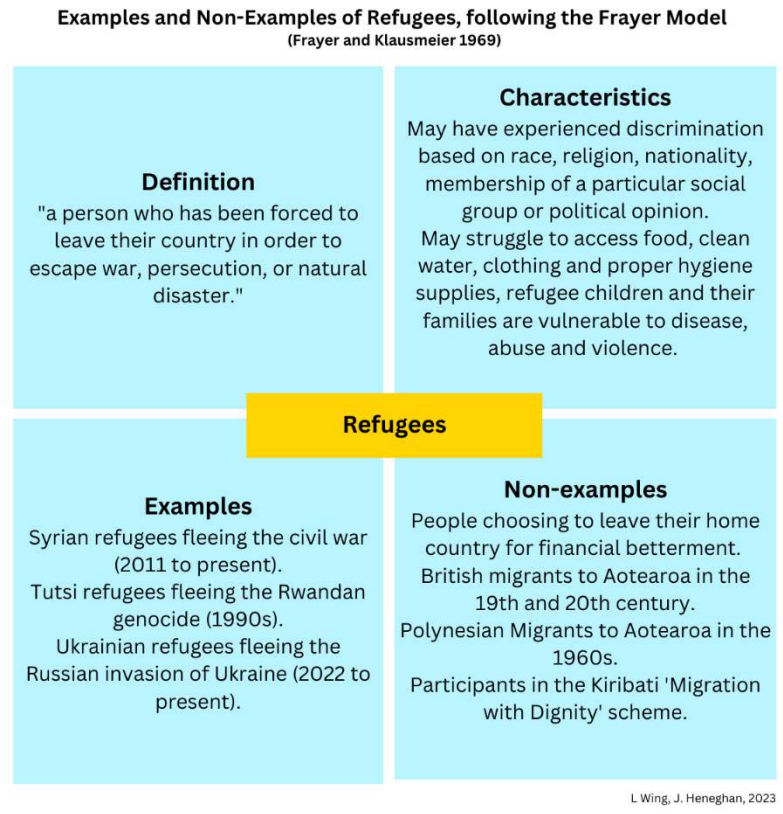
Explicit strategy instruction is the part of teaching in which teachers identify a specific strategy for learners, then **model** exactly **where, how, and why** to apply the strategy to support understanding. This supports learners in having a clear idea of a specific knowledge or skill and knowing **what it is, what it is not, where it is relevant and how it relates** to other ideas and contexts.

Examples and non-examples
An example is a case or situation that is used to illustrate or demonstrate a particular concept, rule, or principle.
A non-example is a case or situation that does not illustrate or demonstrate a particular concept, rule, or principle.
Where examples provide an instance of similarity, non-examples provide an instance of contrast. Learners have the capacity to learn any quality through examples and to generalise to new examples.
Teaching through examples can prevent ambiguity and subsequent confusion.
Examples need to show the breadth and limit of an idea, skill, technique, or concept being taught.

The brain likes to generalise. It forms generalisations out of individual examples, similar to fitting together the pieces of a puzzle. This is more or less how we form concepts—by grouping together things, ideas, and events with shared characteristics so to classify them.

If learners are presented with a sequence of well-chosen examples about a concept, the assumption is that they will begin to mentally note down what is the same about the examples, leading to the development of mental rules.

- **Good examples** support learners in understanding what something is, and what something is not.
- **Poorly selected examples** can lead to confusion and limit understanding.



Teaching Using Examples and Non-Examples

Lessons should include:

- Varied examples that will draw the attention of learners to the deep structure of the concept.
- Contrasting non-examples that will draw the attention of learners to the boundaries of the concept.

Lessons should prompt learners to elaborate about the connections and differences among the examples and non-examples.

Interpolation, extrapolation, and stipulation

Interpolation, extrapolation, and stipulation are three methods that can be used to create and use examples in the classroom. These methods can help to make the examples more meaningful and relevant to learners and can also help to support their understanding and retention of the material.

Interpolation: using examples that fall within a continuum-like range to support learners to make inferences.

Extrapolation: using examples that go beyond the range of the concept or skill being taught to challenge learners to apply learning to new material or in a new way.

Stipulation: presenting a wide range of similar examples and non-examples to support learners to generalise.

Using examples well

5 key approaches support the effective use of examples and non-examples in classroom teaching.

Wording: examples should be presented in language that is clear and accessible for learners -appropriate for their level of understanding. This includes using language that is appropriate for the level of understanding that the learner possesses and avoiding technical jargon or complex vocabulary.

Set Up: Set up examples and non-examples with only one variable to control learner interpretations and inferences. By doing this you create a situation where interpretations and inferences are controlled and ensure that only one interpretation is possible.

Difference: The teacher and learners should treat positive and negative examples differently by using different language or labels. The teacher should encourage learners to analyse the differences between examples and non-examples, and to explain how they are different. This helps learners to develop critical thinking skills and to understand the concept or topic at a deeper level.

Sameness: In order to demonstrate the range and scope of a concept, we should juxtapose maximally different examples within the boundaries of that concept.
The teacher should encourage learners to analyse the similarities between examples and non-examples, and to explain how they are related.
This helps learners to develop critical thinking skills and to understand the concept or topic at a deeper level.

Testing: After demonstrating examples and non-examples, learners should be tested to ascertain if they have acquired what is being taught. The test should not have a predictable order or pattern. If learners can game the test, then this test cannot draw valid inferences about learner understanding.

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MAHARA STRATEGIES – GUIDED PRACTICE AND WORKED EXAMPLES

Guided practice

Essentially 'guided practice' is showing the learner "how to do it" through a series of guided steps that outline the process and support the learner moving from novice to expert.
This approach is informed by the 'Zone of Proximal Development' theory, as developed by Lev Vygotsky.
The 'zone' itself referring to what learner can do, if given guidance and support. On one side of that zone being what the learner simply cannot do yet, regardless of supports, and on the other, there being what the learner can do easily, with minimal to no support.
Our aim? To provide that guidance and support needed to work in the 'zone', but also to remove the guidance and report to encourage independent practice over time, as the learner becomes more of an expert.

Worked Examples

One way of approaching guided practice is through worked examples.
A worked example is a completed, or semi-complete example.
It shows learner what to do, or what is expected, or indeed what success could look like, in a step-by-step manner.
Thinking or processes can be narrated, either by text or aloud.
Worked examples decrease cognitive load, as the brain isn't focused on working out all of the steps, and schema can be built to support mastery over time.

Why do worked examples work?

- Un-scaffolded attempts to solve problems or work through processes can result in incorrect processes being learnt, or the process not being learnt at all.
- Reduced opportunity for mis-learning, or incorrect schema organising as it is learnt in the order best arranged by an expert.
- Supportive of cognitive load, as described previously. This also supports learners in viewing the type of problem or process more positively.

Why use worked examples?

- They provide a step-by-step guide on how to approach a problem or engage with a process.
- Novices tend to focus on the solution, as opposed to learning the steps to reach the solution. This approach takes them through the steps.
- Supports effective problem solving later on, as the steps have been learned in a rational order.

When would I use worked examples?

- At the start of a learning sequence
- When developing procedural knowledge or methods
- Problem solving activities – note, this should only happen when learners are cognitively ready to be solving such problems.

Sweller et al. 2001

An approach to Worked Examples: FAME

FAME is an approach to guided practice and worked examples that takes learners through a step-by-step guide to a task. It demonstrates to the learners what a possible solution could look like, provides support to work out a solution, scaffolds the learners to be able to identify mistakes, and finally develops the metacognitive approaches that learners need to be able to explain their thinking. FAME increases the likelihood that learners will be able to remember the strategy and tackle future problems.

Adapted from the Education Endowment Foundation, UK, 2022

***F**ading*
***A**lternation*
***M**istakes*
***E**xplanation*

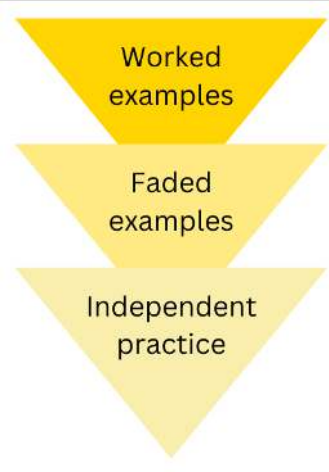
FAME – Fading, Alternation, Mistakes, Explanation

Fading

Give a full worked example, then gradually pull elements away.

Taking away the last steps first is better for novice learners.

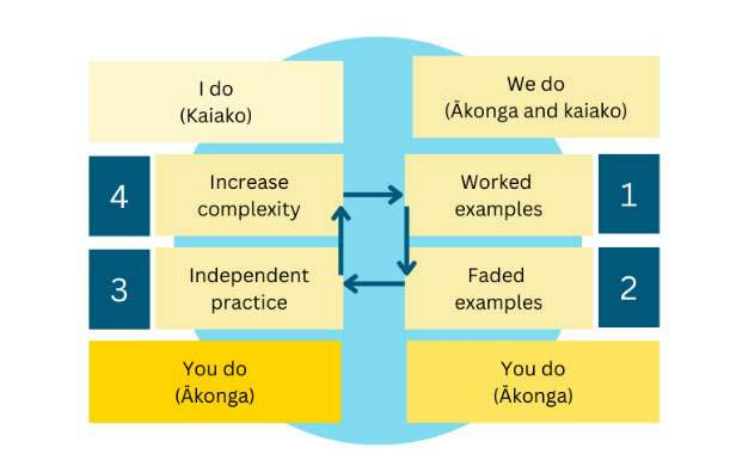
Make sure you know your learner and what they know. Find the Goldilocks zone of scaffolding – not too little, not too much.



Alternation

Present a worked example and then immediately follow this example by asking the learner to solve a similar problem. Sweller (2011).

By alternating between short, sharp worked examples, and similar problems for learners to solve, the alternation strategy keeps instruction within the bounds of learners working memory.



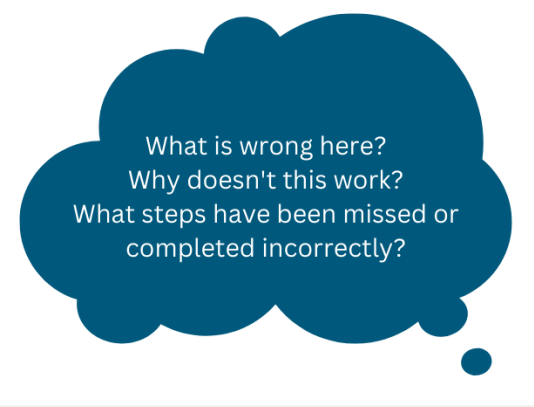
Mistakes

Having worked examples which are **purposefully incorrect** provides further challenge.

It is very important that incorrect worked examples are **labelled** as such.

Being able to explain why something is incorrect supports and demonstrates a deeper understanding of the process and movement towards mastery.

Note – better for more advanced learners – Heemsoth et al. 2014.

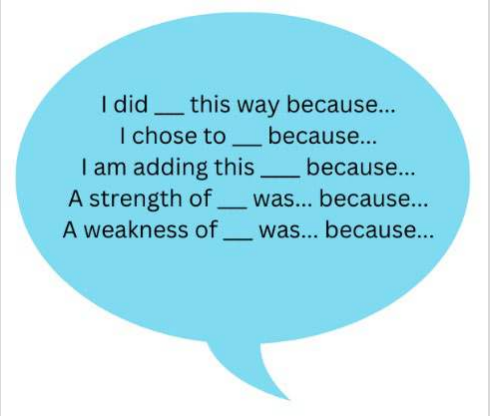


Explanation

Learner think about and verbally explain why each step has been used.

When doing this, both you, and the learner should consider the information a novice would need to approach each step. This is a metacognitive strategy, and supportive of learners having agency over their own learning.

Please see Dunlovsky et al. 2013 for more information.



Adapted from Bob Pritchard, Education Endowment Foundation, 2022. Images by L. Wing, J. Heneghan, 2023 adapted from originals sourced from the Education Endowment Fund.

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MAHARA STRATEGIES – CHECKING FOR UNDERSTANDING

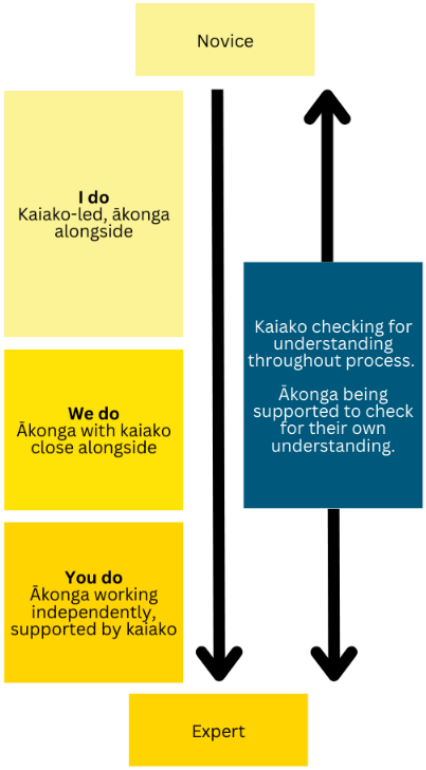
What is checking for understanding?
Checking for understanding refers to the methods by which we 'verify that learners are learning what is being taught, while it is being taught'. Rosenshein, 2012.
Checking for understanding can involve a variety of techniques, such as: asking questions, having learners summarise what has been taught, giving learners short quizzes. By regularly checking for understanding, a teacher can adjust their instruction as needed to better meet the needs of their learners and make sure that they are making progress.

To move from novice to expert and develop expertise, scaffolding is added and removed as appropriate.
An approach informing this transfer from novice to expert is "I do, we do, you do" and is supported by **regular checking for understanding**. Fisher, D., & Frey, N., 2008.

Cold calling, warm calling
Cold Calling is a technique that creates an expectation that all learners are ready to answer every question. This promotes attention, engagement, and participation.
Rather than asking for a volunteer, the teacher poses a question, pauses (allowing all learners to think and answer in their heads) and then calls on a particular learner to respond. The benefits of this technique include increased thinking and participation in learning; improved momentum and pace; more strategic checking of mastery; and greater inclusion.
Doug Lemov, 2015. Tom Sherrington, Sara Stafford, 2018

Checking for understanding as part of 'Moving from Novice to Expert: I do, We do, You do'

Adapted from Wing, L. and Heneghan, J. (2023) 'Moving from Novice to Expert: I do, We do, You do'



Warm calling is a reimagination of this strategy, considering how learners can be supported to participate through warm and demanding expectations.
This can include:

- **Random selection:** Use a random method, such as calling cards or popsicle sticks with learners names, to select learners to participate.
- **Fairness:** To ensure fairness, rotate through different learners and make sure that all learners have an equal opportunity to participate.
- **Non-threatening environment:** Create a non-threatening environment in the classroom by praising and encouraging learners for their participation, and by not criticizing or punishing them for incorrect answers.
- **Prepare the learners:** Teach and model how to respond to a question before calling on them.
- **Give thinking time:** Allow learners time to think before answering, this can help to reduce anxiety and increase participation.
- **Insist on no-opt out:** make it the norm that learners are not able to 'opt-out.

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Supporting warm calling

Build up the 'warm' before and around the 'call.'

Pre-Call: This is when you tell one or more learners that you will ask them to respond after you have given an explanation, read a passage or watched a video. This gives them that extra bit of notice to prepare.

Batched Cold-Call: Prepare several learners to give answers in a predefined order.

Rehearse and Affirm: Check answers non-verbally first (exercise books, MWBs, chat stream etc.) Then select answers that are correct or interesting and then cold call the learner to ask them to expand.

Name what you will do and why:
"Sometimes I will call on you even if your hand is not raised. I do that because I really want to know what you are thinking. And sometimes it's my job to know what you are thinking and how much you understand so I can make sure you learn as much as you can. So be ready and know that when it happens it's because I care about your thinking."

Select learners either randomly, or purposefully with care

Randomly

- Popsicle sticks
- Random number generators
- Magic pen (spin the bottle)
- Pick the name out of a box

Purposefully

- Start with groups and ask two people to share. A confident learner in the group will volunteer. Make sure that you ask other learners in the group questions.
- Lead with the name and make it safe through your questioning frame. E.g., "Now, this was quite a challenging question, what were you thinking about, Jayden?" This helps you move away from a 'gotcha' moment. We always want it to be as open and warm as possible. If learners say they do not know, then, have a simpler back-up question.
- Let learners know who will be called upon first during the activity. For example, write the first five names on the board. This lets everyone know that you are going to follow through.
- While you move around the room as learners are writing or thinking, let them know that they are going to share.
- Reach to the corners: "The teacher conspicuously always reaches into the corners of the class; there are no no-go areas; no silent tables."

Give thinking time

What does 'thinking time' need to be?

- Silent.
- No fidgeting
- Absolutely no talking (no talking from the teacher either – no narrating – you cannot think and listen at the same time).
- Timed

How do we achieve this?

- Clearly name the behaviors that we want to see.
- During the activity, do not be a distraction. Sit still, at the front of the room and look at the learners. Model the behaviour you want to see. Do not be tempted to over explain.
- Respond to incorrect behaviors silently through pointing, the calm palm or 'the look.'
- Clearly build thinking time into a lesson.

Respond to 'I don't know' (aka 'opting out)

In response to "I don't know", **Choose two basic formats to respond:**

1) You provide a cue; your learner uses it to find the answer.
2) Another learner provides a cue; the initial learner uses it to find the answer.

This is a helpful and efficient technique for raising classroom expectations, where:

- Learner tend to duck away from questions rather than answer them.
- Learner don't hear themselves getting answers right.
- The class lacks a culture of accountability and incentive for each individual.

Mini whiteboards (MWBs)

Mini-whiteboards are small, wipe-clean surfaces. Their benefits are:

- They are an instant formative assessment tool that allow teachers to engage with the thinking, understanding and progress of all learners at once.
- There is no more efficient way to find out a) who knows and b) who doesn't.
- They are a sandbox.
- They allow teachers to give immediate feedback – and ask follow-up questions (think of it as 'doing' formative assessment).
- Mini whiteboards ensure participation from all learners. They – literally – visualise thinking.
- They encourage learners to forego neatness in favour of risk-taking.

How to use MWBs – the "show me" strategy:

- Plan questions in advance.
- Standardise response format (fill the board, write a letter or 2-3 words)
- Standardise the show me format ("3-2-1 show me!" or "write-hide-show me")
- Scan from front of the class – the power of mini-whiteboards is maximised if you ensure that you are located in a central position, so that you can quickly scan and read the learner's boards.
- Correct most common errors or misunderstandings straight away in class.
- To those who got it right, the question is: 'how did you work it out?' Then to those who were slightly wrong: 'what made you think of that'?

'Teaching From the Front: Strategy 4 - Mini White boards' Consultant Research Group, led by Karen Haward, Harris Federation, 2020

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MAHARA STRATEGIES - LEARNING FOR MEMORY: IMPROVING RETRIEVAL

The brain is not wired to be able to easily recall all knowledge that is presented to it.
Some information, when presented in a high-stakes way, may stick around – this is often what might be considered a 'memory' – for example, your recollections of the attacks on the World Trade Centre on Sept 11, 2001, or your 20th birthday party. This is known as episodic memory.
Much of the learning that we do in schools is not episodic. It is more likely to be semantic - knowledge of, and knowledge how.

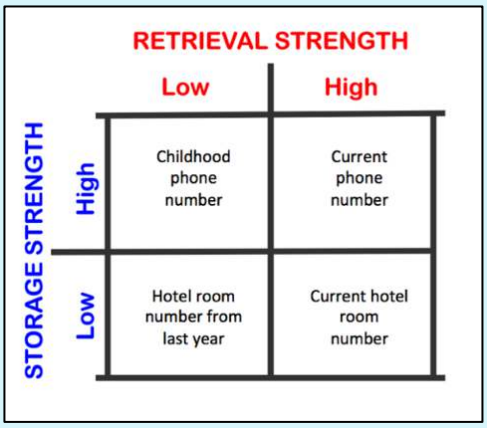
Retrieval Strength and Storage strength

"Storage strength, a measure of learning and retrieval strength, a measure of current ease of access. A distinction that is consistent with the time-honoured distinction between learning and performance".
Robert Bjork and Elizabeth Bjork, 2006, talking about their 1992 'New Theory of Disuse' (University of California, psychology)

Retrieval strength: the brain knows where to find the information.
Storage strength: the brain knows that this information is important, and it sticks around.

Retrieval practice is about signalling the importance of learning to the brain, so that it is more likely to be retained.
This means regular, embedded, and low stakes retrieval of knowledge carried out across a course, not just at the end.

Retrieval Strength Vs Storage Strength



Veronica Yan, 2016

Contextualised Retrieval and Storage Strength
L.Wing, 2019-2023

	Low Retrieval Strength	High Retrieval Strength
High Storage Strength	Was highly important in the past, but has been less important recently. Still accessible with knowledge activation.	Information that is used regularly now, and was used regularly in the past. Has been integrated coherently into schemata.
Low Storage Strength	Something of minor relevance. Recalled only once or twice in the past and not used recently.	Highly pertinent currently, may be new learning or not well integrated into schemata.

Retrieval practice in action

Involve everyone: This is critical if we are to know that all learners in our class are making progress and can recall information from long term memory.
Vary the retrieval diet: Variety can include different styles of retrieval from verbal to written. There are also different forms of retrieval including **recognition**, **selecting, and identifying** the correct answers, **queued recall** (using supports and prompts) and **Free recall** (this is challenging and effortful but also effective as no support is provided).
Ensure time for feedback and reflection: providing time supports reflection in identification of gaps in knowledge and addressing those gaps.

Make the level of challenge desirable: allowing opportunities for retrieval success can also boost confidence and motivation but this must be balanced with retrieval challenge and effort.
Make it time efficient: retrieval practise should not completely dominate a lesson when new content needs to be delivered.
Specify the knowledge: it is better if learners know the set of knowledge any retrieval will be based on, so they can study, prepare and self-check.
Be intentional: make sure that you are covering all content and not just what's easy to prepare. Suggestion: Use a tracker of objectives assessed in your retrieval.

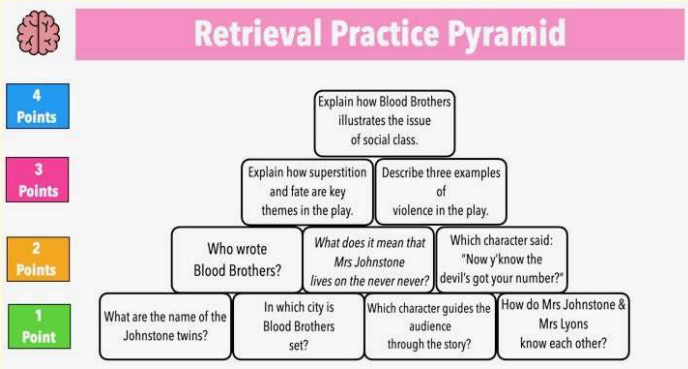
Low Stakes Retrieval Strategies

Simple to do, quick to do, easy to self-correct, without any significant impact on final grades, and less 'scary' than a regular test.

- Hei Mahi/Do-now/Starter questions
- Exit tickets.
- Review questions (Max of ten questions in a series)
- Discussion contributions – in person or online
- Scaffolded brain-dumps
- Mini whiteboards
- Self-marking quizzes

Retrieval Pyramids

A way to scaffold a range of retrieval questions, going beyond basic factual recall.



Points can be used to create a sense of competition, illustrate the depth required from some questions or to scaffold for different learners.

Image from Kate Jones, 2021.

Hinge Questions

Hinge questions are carefully crafted multiple choice questions which aim to assess understanding of a key concept.

A computer costing $1500 is to have its price increased by 20%. What is the new price?	
A) $1600	**B)** $1520
C) $1200	**D)** $1800

All of the options provided are plausible and feasible and can highlight potential misconceptions and misunderstandings.
Good hinge questions are durable. They will be questions to ask again in the future and are portable, working well in different classrooms.
When used as a hinge question, there is no marking at all, simply scanning the responses through self and peer assessment do the marking and provide instant feedback for learners and teacher.

Examples
If the teacher had just concluded a topic on word classes and wishes to assess whether learners can identify a verb, they might ask the following:
The cat purred loudly at me.
Where is the verb in this sentence? Is it word A, B, C or D?
If the teacher had just taught rhetorical devices, he/she might ask the following: which of these is alliteration?

- The golden disc of the sun burned.
- The sizzling summer sun smiled sweetly.
- I felt the red-hot sun on my back.
- The trees swayed gently in the wind.

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MAHARA IN PRACTICE – SUPPORTING THINKING HARD

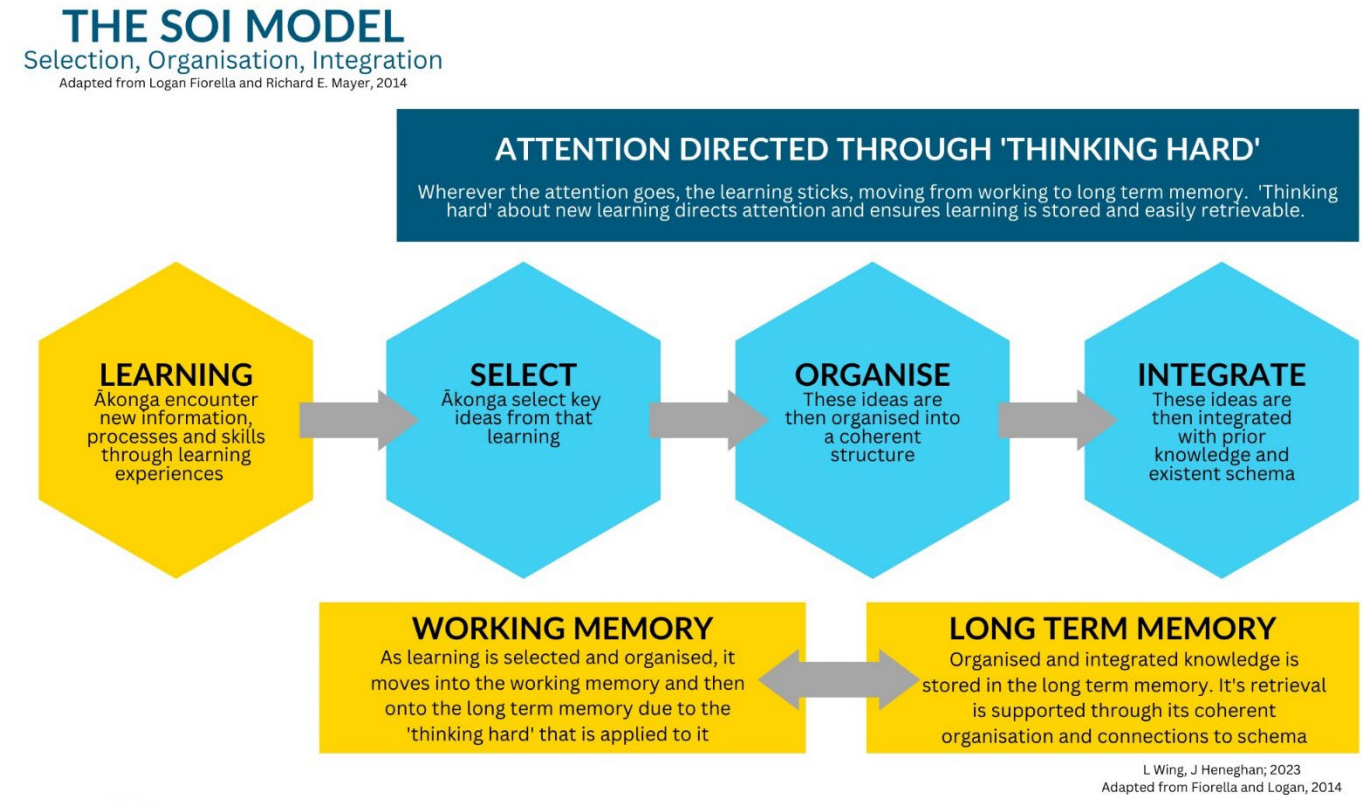
In Te Reo Māori, *mahara* means 'to think, thinking, thought'.

An application of cognitive load theory is the "generative learning approach."

Learning as an *active task* that *requires effort* from the learner. It suggests that learning is supported by ***thinking hard*.**

Thinking hard
We want to make the learner **"think hard".**
Generative learning describes that this is effective when learners are supported in…
Selecting key ideas
Organising ideas into a coherent structure
Integrating ideas with prior knowledge

The SOI model utilises 'thinking hard' by directing attention to the most relevant parts of the learning and facilitating its interrogation by learners. By doing this, learning is more likely to enter the long-term memory, and be organised in such a way that it can be easily retrieved for later use.
(Fiorella and Logan, 2014)



The Hattie Meta-Study and strategies supporting 'thinking hard'.

Professor John Hattie of the University of Melbourne, Australia, has spent over 25 years analysing educational research to identify which variables had the greatest effect on learning. Hattie's research focuses on 'effect-size', which balances the benefit of the variable against aspects such as its cost or challenge to integrate. The study found that the average effect size is 0.4, representative of one year's worth of growth per year for a learner. Anything above 0.4 as having a better impact on learning than it not being used.

Strategies supporting 'thinking hard' and 'select, organise, integrate'.

Fiorella and Mayer (2015) identified a range of strategies shown to promote learners understanding across many studies. These include:

- Summarising
- Mapping
- Self-testing
- Self-explaining
- Teaching

These strategies support learners to 'think hard' and 'select, organise and integrate'. The meta-study has identified positive effect sizes for these strategies ranging from 0.5 - 0.77.
These strategies are also relevant to secondary contexts and have a strong research base to support them.

Research base and effect size of the strategies above		
Pedagogical strategy	**Positive research base**	**Effect size**
Summarisation	26/30	0.5
Mapping	23/25	0.62
Self-testing	44/47	0.62
Self-explaining	44/54	0.61
Teaching	17/19	0.77

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MAHARA STRATEGIES – SUMMARISING

Summarising in terms of generative learning is employing processes that require learners to collect and reorganise the main points from their learning at different points in the learning process. This can mean producing longer summaries at the end of a learning sequence, or interspersing summaries in order to support their comprehension. Merlin Wittrock (1974) described an effective approach as one which forces learners to engage with generative strategies – selecting, organising, and integrating the learning.

When asking learners to summarise we are asking them to engage with the selection, organisation, and integration of cognitive processes, this supports "thinking hard". This means that:
Learner have to *extract* key information, make *links* and *associations* within new material, and then make associations with material which is already stored in their existing schemata. This leads to deeper learning.

Generative Learning: We want to make the learners "think hard".

Generative learning describes that this is effective when learners are supported:

- **Select** key ideas.
- **Organise** ideas into a coherent structure.
- **Integrate** ideas with prior knowledge.

This approach supports learners in focusing attention, accessing long term memory, and revisiting prior learning.

Summarising: restating the main ideas of a lesson or activity in one's own words.

- Summarising learning is employing processes that require learners to collect and reorganise the main points from their learning at different points in the learning process.
- This can mean producing longer summaries at the end of a learning sequence, or interspersing summaries in order to support their comprehension.

How to summarise in the classroom

Summarisation is at its most effective when time is devoted to its direct teaching, including how to select key points, remove irrelevant material, select, and generate topic sentences.

- **Asking learners to summarise key points from a text**, limiting them to no more than 30 words (sometimes reducing this to no more than 10) to ensure a focus on retaining salient points.
- **Summaries then being shared and discussed** in order to explore the elements chosen, which may have been omitted and if the summary is a clear representation of the source material.
- **Supporting summary work in being a closed book** activity supports learners in paying greater attention to the original learning material and gives them opportunities to make connections between different information in their summaries.

Why do note-taking?

- **Prevents forgetting**: Our memory fades quickly. For most learners, forgetting occurs very rapidly after listening to a lecture, or reading over informational material even if the material is engaging and interesting. After lectures, for example, research shows that we forget 50% of what we hear within an hour and more than 70% within two days.
- **Encourages concentration:** Taking effective notes requires learners to be mentally active. One must pay attention, interact with information, make decisions about what to record, and write. Given that the mind is occupied with a demanding task, there is less opportunity for the mind to wander.
- **Records testable material:** Teachers generally expect learners to remember and apply facts and ideas presented. Assessments are based on key ideas teachers emphasize in courses of study.

The Cornell Notetaking Method developed by Walter Pauk - 1962

Record- prepare notepaper and record notes by paraphrasing. Encourage learners to use strategies like using headings, indenting, brief sentences, abbreviations, and symbols to support efficient notetaking.

Question- Formulate questions based on the notes taken and record in the left-hand column. Should focus on big ideas and key definitions.

Recite- Likely to occur outside class. Using questions, learners should explain the information in the notes out loud, in own words.

Reflect- look for connections in the notes, or between the notes and other learning, or learner experience. OR a range of reflection questions could be used as prompts.

Summarise- write a very brief summary of the main ideas in own words and record in the bottom section of the notepaper. This could be a homework task, or summary task in a lesson.

Review- notes can be used as a study aid with various review approaches or can be reviewed in class with both open and closed book review activities.

Notepaper Setup

<table>
<tr><td colspan="2">Learning Intention:</td></tr>
<tr><td>Write the main idea here.

Write recall questions here.</td><td>Write the main notes here.

Record notes here

Remember to focus on:
• Testable information
• “Big ideas”
• Definitions supporting details

Bullet each piece of new information and skip lines to visually organize notes</td></tr>
<tr><td colspan="2">Write summary of notes here:

Write a summary of notes recorded on each page in this section of your notes.

Or create this section on the last page of your notes only and summarise all information there.</td></tr>
</table>

Adapted from Pauk, 1962

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MAHARA STRATEGIES – MAPPING

"Organisation is at the heart of learning." Oliver Caviglioli

Mapping refers to a group of different techniques in which the learners represents texts, whether written or spoken, as a **spatial organisation** of words with lines connecting them to **show relationships**. Techniques can include concept mapping, knowledge mapping and graphic organisation.

Concept Mapping	Knowledge Mapping	Graphic Organisers
Concept maps are a **network in which words represent key concepts and lines connect them to show** how the words are linked. These lines are often annotated with the description of the link.	Knowledge maps are a specialist form of a concept map in which the links are confined to predetermined types (e.g., "this leads to", "this is part of", "this is characteristic of").	Graphic organisers are a more specialist map, still including a structure which is used to categorise information tightly. Examples include using matrices for compare and contrast, flow charts for cause and effect and hierarchy for classification.

How to use mapping

Learner can be asked to read a text about a topic they are studying and transform it into a concept map.
As learners complete concept maps they draw lines between different categories information to show linkage. These lines are annotated to explain what the link is. In a knowledge map the lines already correspond to a particular function, such as causality.
Leaving a gap between encountering new information and completing a map can be helpful to learning.

Effective Mapping

To be effective, learners need to be trained in how to map effectively. This takes time. Consider teaching explicitly:

- Where titles go, or what titles should be.
- The size of bubbles, arrows, or other shapes.
- The amount or type of content.
- The amount of time that should be taken.
- Showing desired outcomes (for example, by showing exemplars).

Consider mapping skills as something that requires support to move from novice to expert. In the same way that maps can support learning, they must also be learnt and taught.

A selection of graphic organisers from 'Organise Ideas' by Oliver Caviglioli and David Goodwin, 2022

CHUNK

Tree Diagram

The quintessential hierarchical structure, used for everything from management to animal taxonomies. Their only problem is the space it needs at its base as it broadens.

Mind Map

Once the hippies' map of choice, its organic aesthetic disguises the fact that it is merely a tree diagram radiantly emanating from a central point. This solves the space issue.

Concept Map

Hierarchical, connected mini-sentences, of subject-verb-object structure, form the basis of concept maps. They are very precise and, therefore, quite difficult to create.

COMPARE

Venn Diagram

The visual depiction of set theory. Agreed attributes determine inclusion in a set. An overlap of circles highlights the similarities.

Double Spray

Like a Venn diagram, the double spray shows which attributes are different and which are shared. The central, linked features highlight the similarities.

Crossed Continua

Used to compare two or more topics against two sets of criteria each on a continuum. Placing the topics against these two continua immediately reveals differences.

SEQUENCE

Flow Chart

The simplest way to show the flow of a process by a series of factors or events joined by arrows. Too many such nodes makes understanding more difficult.

Cycle

The same as a flow chart but instead of a one-way direction, a cycle is established.

Flow Spray

Too many nodes make flow charts overly complex. Breaking it down to its main events and showing the attached subsidiary ones retains clarity.

CAUSE & EFFECT

Input-Output Diagram

Multiple factors are involved in a cause and effect dynamic. This diagram allows you to show them centred around a catalyst.

Fishbone Diagram

Situations are rarely explained by a simpleline of causes. In suchcases, causes aretechunked into similarthemes to indicate a more subtle sphere of influence.

Relations Diagram

This resembles a concept map but is not hierarchical and is only related to causal links. Any factor can influence another. The linked arrows indicate the line of influence. This can be specified with a verb.

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MAHARA STRATEGIES - SELF-TESTING

Self-testing is the process by which learners recall information from a learning episode, using questions or activities which require them to retrieve either specific details or broader recollections, such as with brain dump activities. Self-testing covers a wider range of information from the topics studied and can be used to synthesise information from a range of topics.

Why use self-testing?

The ability to memorise information improves when people practise retrieval in comparison to simply restudying materials.

Self-testing and low stakes quizzing have significant impact not only on memory but on the learning process itself. "The testing effect" describes the finding that **long-term memory is increased when part of the learning period is devoted to retrieving information from memory.**

Self-testing shows stronger performance in learners who self-test compared to learners who re-read material. We all want learners to think hard about their learning in order to encode it in their long- term memory and do more with information stored within, so ensuring learners are aware of these conditions can ensure they engage with the learning materials in an active and meaningful way.

Effective self-testing	**Reducing the limitations of self-testing**
Select and access knowledge: Learner review what they know in relation to the learning as a whole. **Organise knowledge:** Learner complete further review and test based on identified areas of need. **Integrate into schema:** Learner refine answers and practice them further.	Have high quality and readily available review material. Explain the why – learners can be tempted to use the notes while testing. This reduces the efficacy of the strategy. Corrective feedback needs to be readily available for after retrieval either returning to the learning materials or having access to answers. Ensure that testing is learner-led, not teacher-led. Testing should be by them, for them, based on their identified gaps.

Benefits of Flash Card Methods

Active recall makes stronger neural connections in the brain, as opposed to passive learning

- Corrective Feedback is immediate and does not require the teacher
- Supports metacognition
- Supports the transition of learning into long term memory through spaced retrieval practice

Self-Testing Approach 1: Traffic Light Review

Traffic Light Review self-testing is an approach that asks learners to identify their level of confidence for various success criteria within a topic. Red, amber, and green are used to signal confidence before, during and after self-testing. This process encourages self-reflection and refinement of retrieval and revision needs.

Teacher setup

- Build a Traffic Light review sheet that has all of the success criteria that you wish your learners to test themselves against.
- Along with the success criteria, there should be a red, amber, and green column included in the table.
- Use the success criteria to make a series of flash cards.
- You will also need a ‘red’, ‘amber’ and ‘green’ sorting card.
- If you are feeling generous, you may cut up the cards. Otherwise, the learner can do this.
- Now make a third sheet, which is a second review sheet.
- This is for after the first round of flashcard practice.

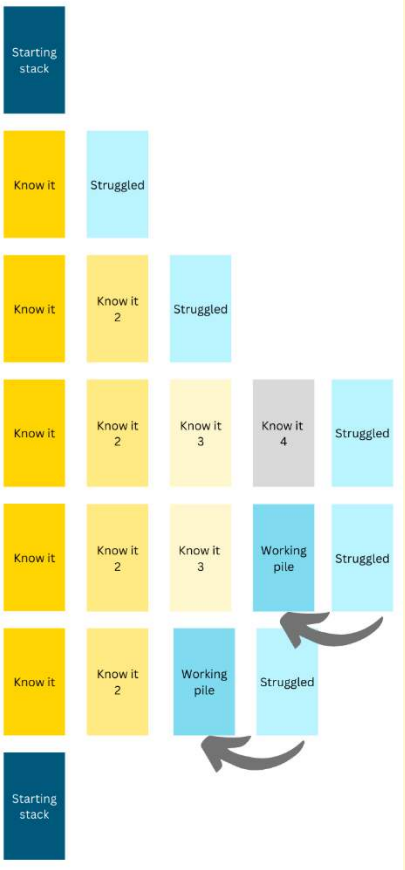
Learner involvement

1. Give the self-review sheet to your learners.
2. Get them to consider *where they think* they are at with each criterion by coding for green, amber and red. The purpose of this is to get them thinking about where they are likely to be.
3. Based on levels of learner confidence, you may direct the class to review their notes at this stage, paying close attention to the red and amber.
4. Now give learners sheet B (the flashcards)
5. Learner then need to test themselves, closed book, against each of the flash cards.
6. To allow for multiple uses, learners should record their responses onto a medium *other* than the back of the flashcard.
7. Once cards have been completed (note – this may take some time) mark collectively, peer mark or self-review based on notes. Ensure that misconceptions are quickly rectified.
8. Based on the marking, get learners to sort their cards into green, amber and red.
9. Green – no significant issues, minimal improvements needed. Amber – some adaptation needed. Red – answer incorrect or needing significant development.
10. Starting with the cards in the red pile get learners to improve their work where needed.
11. Finally, use the second review sheet to record which cards needed what – this allows learners to identify where to start next time.
12. When the time comes to review again, start with the cards identified as red in the previous review.

Self-Testing Approach 2: The Waterfall Method

The waterfall method is an approach to using flash cards that works in a similar way to the traffic light review system.
Learner have a set of around 50 flash cards, that they sort into piles as they self-test. Over time, the piles should get smaller and smaller. Pile 1 is the master pile. All flash cards that learners definitely know, go into that pile. Then, learners work through the second pile, testing themselves on those cards. Cards that are unknown after that review go into a third pile, with known cards being added to a fourth. Then the unknown cards are reviewed again, with the same process being applied over and over until there are no cards left.

Christine Sarikas, 2019



Self-Testing Approach 3: Blind Mind Mapping

In this approach, learners are given a prompt from which they, without using their notes, mind-map their knowledge about that prompt. They are then prompted to discuss their mind-map with a peer, then getting the opportunity to add further points. They then explain their map to others, and finally review and edit their maps as a class. Another element is to add in cross-topic links.
This approach requires learners to sort through their knowledge, organise it into a map, check their own understanding with a peer and finally consider how they might articulate their ideas coherently to a wider group.

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MAHARA STRATEGIES - SELF-EXPLAINING

What is self-explaining?
Self-explaining is a meta-cognitive approach in which the learner explains why they have chosen a particular process or strategy (methodology) or think in a certain way (opinion/thinking).
Through self-explaining, learners are supported to **select**, **organise,** and **integrate**.
Select the relevant information from the material to explain by thinking about the key points and the question they have been asked or asking themselves.
Organise this information into a coherent form that allows them to answer a question or to make a point.
Integrate the new information into their existing schema by drawing on their prior knowledge to make sense of it.

Limitations of self-explaining
Time is needed to train the learners in how to do this well.
It can be time consuming in the classroom to use, compared to other strategies.
There is a fine line to walk between those learners who do not have enough prior knowledge to make use of the strategy, and those whose knowledge is so high that it is unnecessary.

Much of what we do in the classroom is already promoting self-explaining. When learners are given an input of new information, they may be asked some questions about their basic comprehension, but they will also be expected to go further in generating a greater understanding of the material based on their prior knowledge. Self-explaining should go further and begin to ask the learners how they arrived at the answer they reached. To achieve this end learners must be able to interrogate their own explanation.

Defining self-interrogation

Self-interrogation means learners asking themselves ongoing 'why', 'what', and 'how' questions about their own answers.
Self-interrogation is about digging into the next layer of each idea, scratching through to consider the next layer of thinking.

We can support self-interrogation by:

Modelling it aloud, ourselves when explaining ideas, processes, or opinions.
Explaining it as a meta-cognitive strategy – what it is, why it is done, how it will help.
Using (gently) interrogative questioning approaches.

A Socratic conversation is…

1. Led by a person who does nothing but ask questions.
2. Systematic and disciplined (it is not a free-for-all).
3. Safe – keep it in the 'productive discomfort' zone!
4. Directed by the leader, by and through the questions they ask.
5. Supportive of all participants being helped to go beyond the surface of what is being discussed.

Our goal as a teacher in a Socratic conversation is to…

Classify the thinking: "what do you already know about this topic?"
Probe assumptions: "what actual evidence would lead you to reach a different answer to this question?"
Demand evidence: "what evidence have you got for the conclusion that you have reached?"
Explore implications: "what are the implications for your conclusion? What would need to happen or change?"
Question the question: "why do you think this was an important question to ask?"

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Preparing for a Socratic conversation

Ahead of time, get your class familiar with the type of conversation you plan to have with them:

1. Pass out a transcript of a Socratic discussion (some in your handout) to your class.
2. Explain what it is and ask them to pay attention to the types of questions being asked, and the types of responses.
3. Dramatize the transcript by reading it aloud together. To do this, assign learners to read parts of the transcript. You read the part of the teacher/questioner.

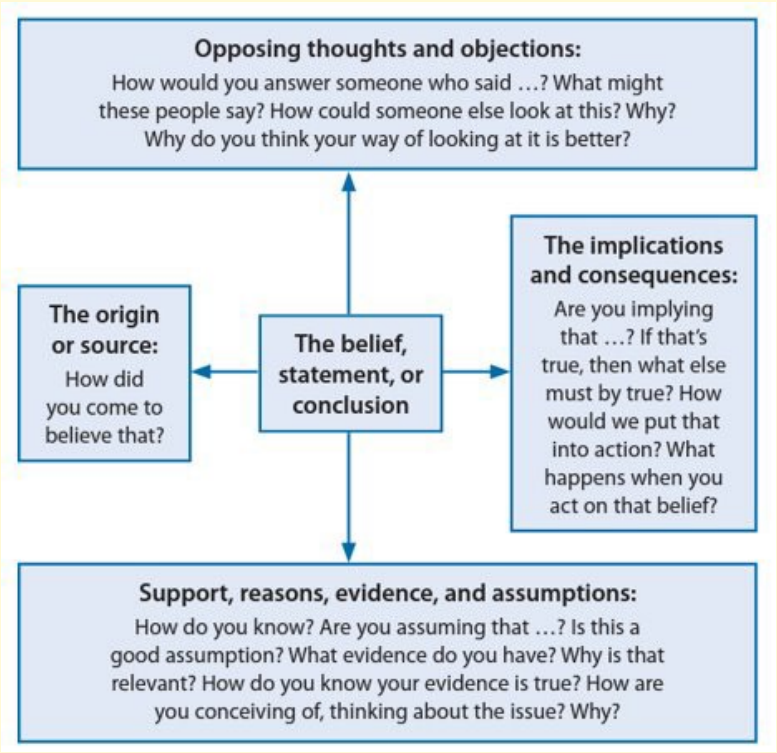
In your teacher preparation:

4. Consider the purpose of this conversation. What are the learning intentions? What are the success criteria?
5. Make a list of questions that focus on a central idea you would like learners to master. Consider using the question prompts map below (*Richard Paul and Linda Elder, 2006)*
6. Consider how long you want to carry out this conversation for, and consider who might need extra support, consideration, or scaffolded questions.
7. Consider how you will track learner engagement, participation, and energy levels. A clip board is rather effective.

With your class
Communicate what it is that you are going to be doing, how it will work and why you are doing it. Communicate the learning intentions and success criteria. Explain and communicate the idea of 'productive discomfort'.

8. Communicate and reiterate expectations before and during the conversation. This includes expectations for participation in the discussion as well as class Tikanga.

Possible Questioning Prompts



Richard Paul and Linda Elder, 2006

Leading a Socratic conversation

1. Explain that by the rules of Socratic questioning you are allowed only to ask questions. You are not allowed to answer any questions, except by asking another question.
2. Tell the class that their job is to attempt to answer the questions you ask.
3. Think aloud as you lead the discussion. Don't rush. Base each of your questions on the answer given by the last learners.
4. Take seriously every answer that is given. Make sure it is clarified so that everyone in class understands it.
5. Monitor the vibe in the room and how your learners are going. Productive struggle – yes! Discomfort- no!

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MAHARA STRATEGIES – TEACHING OTHERS

This strategy asks learners to explain important concepts from their own learning to others. It is effectively peer to peer and peer to group teaching.
Teaching requires learners in the first instance to "think hard" about the concepts which they are studying. Studies indicating that learners who knew they were studying to teach were more motivated in their study of materials and outperformed their peers who studied using different methods.

How to use learning by teaching in the classroom
Teaching as a learning strategy can be incorporated into time limited activities by telling learners that they will be explaining concepts from text, lecture, or video to their partner once they have studied it. Give time to reflect before teaching so learners can engage in the selecting and organising process, before continuing to organise and integrate the information.

Limitations of learning by teaching
A significant issue to be aware of with this approach is the potential to embed false learning in both those adopting the role of the teacher and those being taught. Good quality study materials, monitoring and timely correction by the teacher are required to help avoid this.

Teaching Think Pair Share
Think-Pair-Share is a form of structured discussion supporting individual reflection and peer supported learning in response to a directed prompt from the teacher.
It is supportive of the relational practices described by Hattie and Bishop as highly effective whilst also supporting learners in "thinking hard".

Think	Pair	Share
Each learner thinks about the question individually and is encouraged to take notes. This stage helps to activate prior knowledge.	Learner pair up to exchange and discuss their ideas. Learner should listen attentively and ask each other specific and nuanced questions	Learner share their validated and maybe extended ideas with the whole class. They should explain their partner's main points as this helps to reduce the fear of failure for more reluctant learners.

Benefits of Think-Pair-Share as described by Busch and Watson, and Sherrington

Developed Perspectives	Increased Participation	Added Accountability
Promotes Problem Solving	Makes Learners Feel Heard	Gets Full Participation
If learners are working with others, they are more likely to experiment with different techniques when solving a problem. This suggests that the phrase 'two heads are better than one' has some merit. Learners learn by discussing each other's opinions and reasoning and by examining different perspectives.	Think, Pair, Share can improve learners participation. The combined effect of individual preparation and receiving validation of their ideas from their partner increases learners self-confidence, making them more likely to speak up. This is especially applicable to shy learners.	When learners verbalise their ideas to their peers during the PAIR and SHARE stages, they learn to take responsibility for what they say as they become involved in the learning process of their partner and the class. By sharing their partner's answers, it helps learners avoid repeating the same points.

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Fundamentals of Think-Pair-Share	
Build Routines	**Responsive Practice**
Embed over time	Adapt to the learner, demonstrate high expectations
To encourage learners to engage in the process fully, strong routines are essential. Scaffolds such as the one opposite and verbal prompts train learners how to conduct structured discussions. Before they begin TPS, write the focus question or statement on the board. Aim to be as specific as possible - nothing too broad or vague. Provide a time frame for each stage of the TPS process or you might run the risk of it fizzling out. During the THINK phase, it is useful to get learners used to recalling knowledge and writing down notes.	When learner are in the PAIR stage, it is essential that you monitor discussions and listen to their ideas. In your interactions, support certain learners with careful questions or probe them to extend their ideas further. Make learners aware that random pairs will be selected to share their points later. A useful strategy is to pre-select and ask one or two pairs to share their points in the final stage. During the SHARE stage, it is useful to capture a summary of points by writing the ideas of your learners on the board. This helps make it concrete.

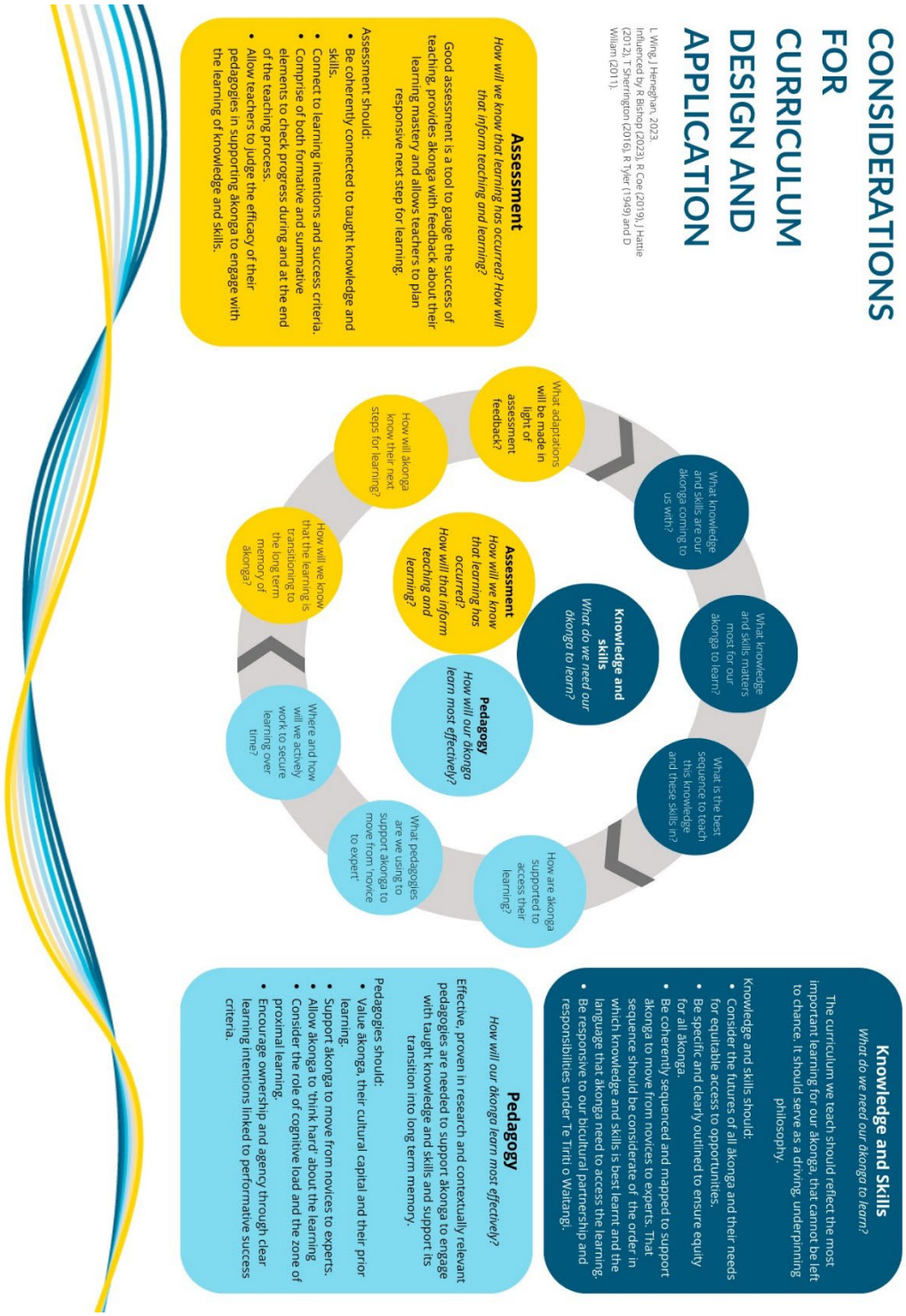
Scaffolding Think-Pair-Share to support sharing, participation, and accountability.
Providing learners with clear prompts supports the embedding of effective Think-Pair-Share and enables it to effectively foster engagement and accountability.

Think - Engage Independently	Pair - Conduct Discussion	Share - Give Rehearsed Answers
Learner prompt: What do I know that might help? What ideas do I need to consider? What approach would work?	**Learner prompt:** What ideas will I put forward to my partner? How might my partner help? How will I actively listen to my partner?	**Learner prompt:** What are my main points? What are my partner's main points? How will I summarise our points?
To help with thinking: Important topics or concepts. Relevant key vocabulary. Diagrams or drawings. Summary of main ideas. A specific teacher explanation or lesson.	To help with discussion with a peer: Make direct eye contact (if possible). Wait for your partner to finish. Ask questions to clarify. Give supporting examples. Prepare to share a response.	To help when sharing with the class: Summarise your main points. Acknowledge/affirm partner's points. Explain any counter points. Use key vocabulary. Refer to what you already know.

CONSIDERATIONS FOR CURRICULUM DESIGN AND APPLICATION

Curriculum is at its most effective when it is clear about the knowledge and skills that cannot be left to chance and need to be secured. Knowledge and skills are inextricably linked to pedagogy and assessment, with pedagogy supporting sense making for learners, and assessment informing next steps for both teachers and students.

When knowledge, pedagogy and assessment are aligned, and of high quality, the magic happens. Our learners are equipped to achieve their own very best. With that comes access to opportunities and equitable outcomes.



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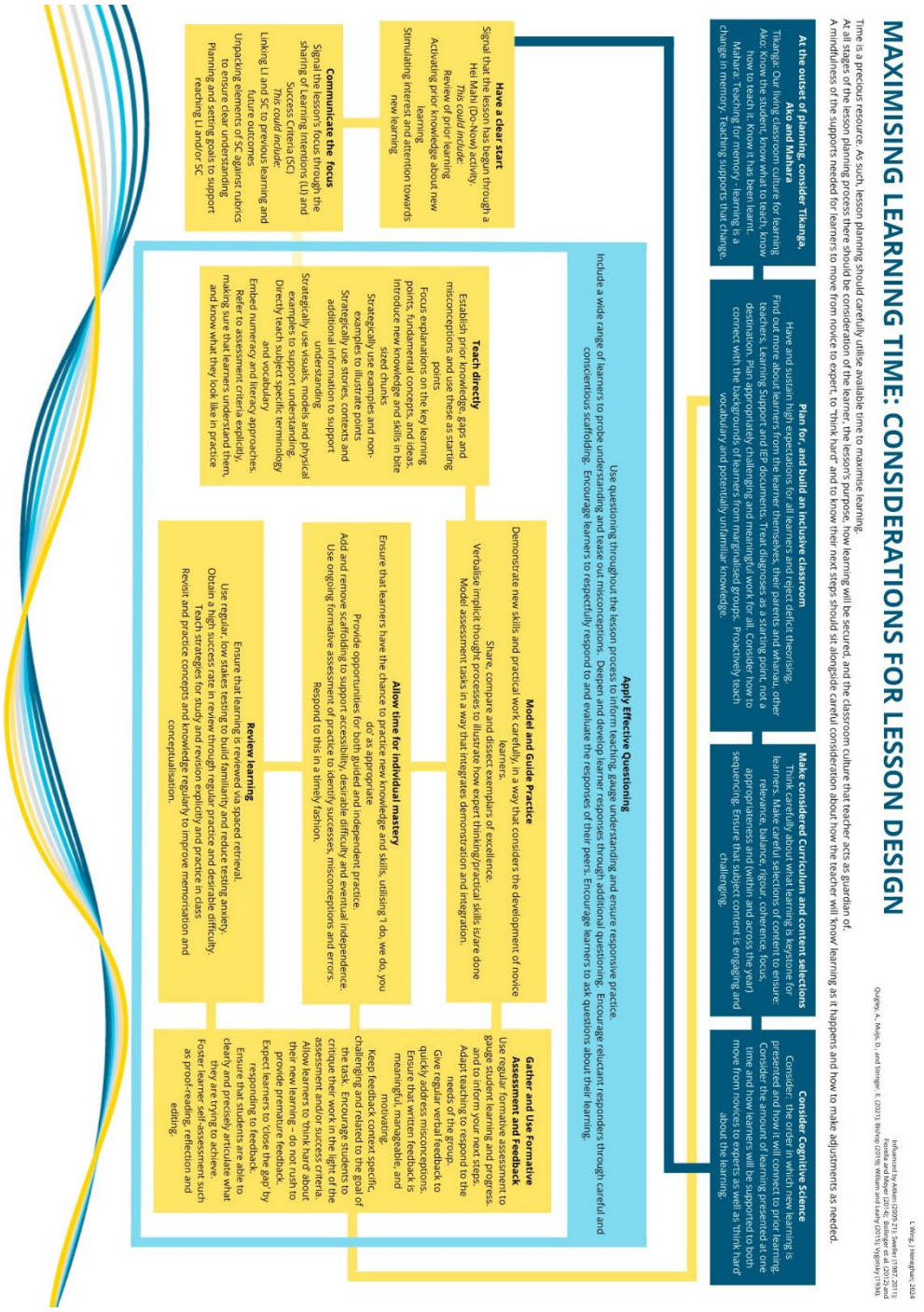
CURRICULUM DESIGN – MAXIMISING LEARNING TIME: CONSIDERATIONS FOR LESSON DESIGN

To maximise effective learning time, lesson planning should be carried out with consideration and care. The graphic below discusses a series of considerations that are supportive of effective lesson planning and design at Long Bay College. Please refer to Tino Akoranga for further details about concepts and approaches detailed in the graphic.



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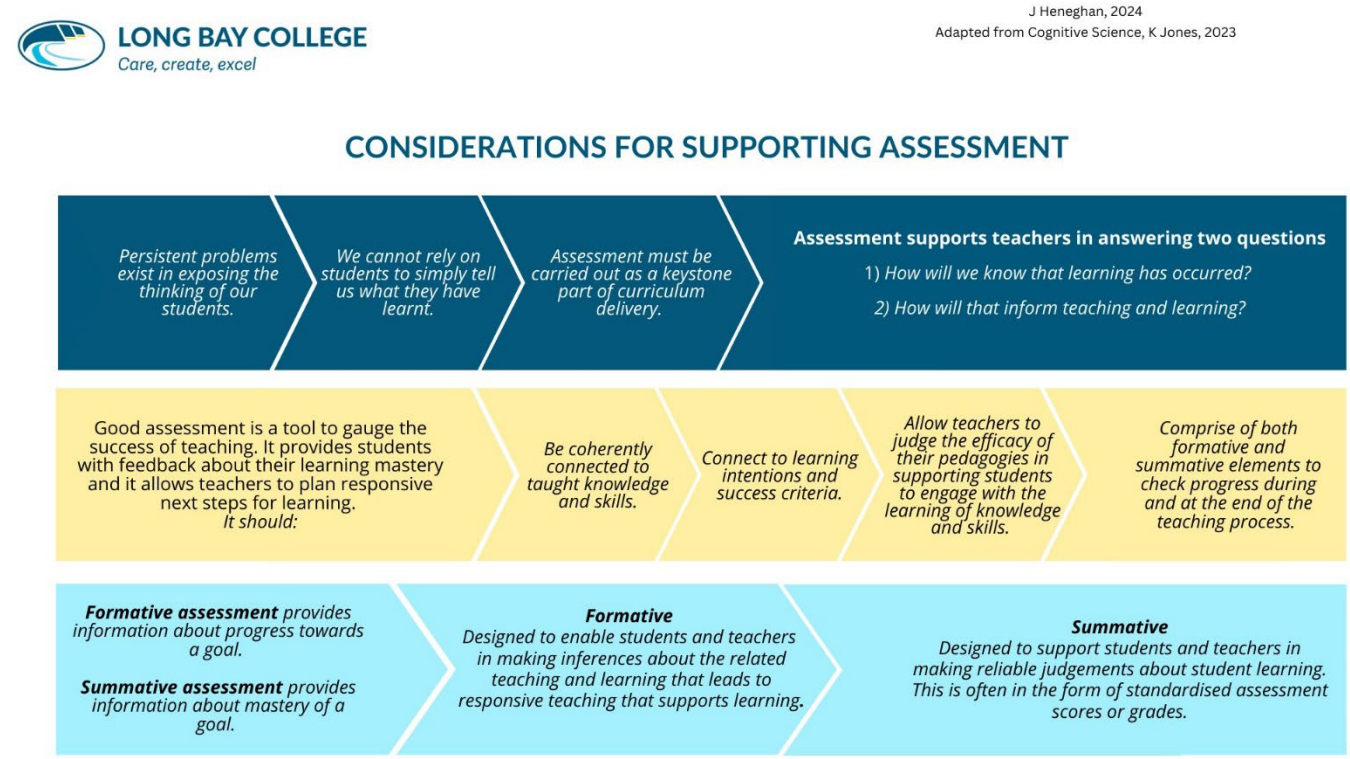
CURRICULUM DESIGN - CONSIDERATIONS FOR SUPPORTING ASSESSMENT

Assessment plays a crucial role in ensuring that learning progress and overall learning outcomes are known. It ensures that we can effectively judge what learning has been achieved, what has been retained in the long-term memory for later use, and what learning is still to come. Formative and summative assessment both play a role in this process, providing information about progress towards, and attainment of a learning goal.



CURRICULUM DESIGN - CONSIDERATIONS FOR THE USE OF ARTIFICAL INTELLIGENCE – TRIAL APPROACH

Adapted from Perkins, Furze, Roe and MacVaugh, 2023

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TRIAL - ARTIFICAL INTELLIGENCE (AI) GUIDANCE SCALE

AI can be a useful tool - but it is important to use it in ways that secure your learning and are fair to other students. The graphic below is designed to support teachers, students and caregivers to communicate about what amount of AI can be used for during specific learning tasks.
This scale is currently being trialed.

1 — NO AI USE ALLOWED
This assessment needs to be completed entirely without AI assistance.
You need to rely on your own knowledge, understanding and skills.
You may not use AI at any time during this assessment.

2 — AI-ASSISTED IDEA GENERATION AND STRUCTURING
AI can be used to help you brainstorm,
create structures and generate ideas for improving your work
You may not include any AI in your final submission.

3 — AI-ASSISTED EDITING
AI can be used to help you improve the clarity or quality of your work,
but it cannot be used to create any new content.
AI can be used, but your original work with no AI must be- provided to ensure content integrity

4 — AI TASK COMPLETION, HUMAN EVALUATION
AI can be used to complete certain elements of the task, but you need to provide evaluation, or commentary around the AI content. All AI content should be clearly labelled and cited.
AI can be used to complete specific tasks, with student evaluation and clear labelling.

5 — FULL AI
You can use AI throughout your assessment, to stimulate ideas, enhance your own and to add content. You should still record that AI has been used in your work.
AI Can be used freely in this assessment.

UNSURE?
Ask your teacher to clarify which level of the AI scale the assessment should be.
Talk to your subject teacher, or show them your work.
Keep copies of your work before and after the use of AI, just in case. Use a different font, colour or text style for AI content during drafting
(and even submission) to help you keep track of it.

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CURRICULUM DESIGN – LEARNING INTENTIONS AND SUCCESS CRITERIA

Learning intentions and Success Criteria

Effect size of Teaching Strategies

Teaching Strategy	Hattie effect size
Learning intentions vs, no learning intentions	0.68
Clear learning intentions	0.48
Appropriately challenging goals	0.59
Teacher clarity	0.75
Collective teacher efficacy	1.57

Hattie, 2009

Supporting Understand, Know, Do	Drivers of whanaungatanga and high-quality teaching in the classroom.
A clear and consistent approach to the fundamentals of curriculum design is helpful to integrating the new curriculum model. There is a variability in New Zealand relating to curriculum design terms.	Voicing and demonstrating high expectations: - What is expected of learners is clearly identified, as is what learning involves. - Activities are cognitively challenging. - Interactions include talk about the capability of learners to set and reach short- and long-term goals. Bishop, 2019

What are learning intentions? *The planned input*	What are success criteria? *The performed output*
Signals to learners: *"Where am I going?"*	**Signals to learners: *"How am I doing?"***
Statement that explicitly describes what learners should know, understand, or be able to do as a result of teaching and learning. - to understand - to know - be able to do Learning intentions identify new learning and focus on transferable skills. Archer, 2018	Describes what successful attainment of the learning intention looks like. Success Criteria are the measures used to determine whether and how well a learner has met a learning intention. Allows the teacher and learners to make judgements about the quality of learning. Archer, 2018

Learning intentions checklist

I create and set learning intentions for my learners.
The learning intentions are:

- Focused on what learners are learning *(not the activity)*
- Written clearly in learner-friendly language.
- Written without context/content *(when possible)*
- Specific, Measurable, Achievable.
- **Revisited throughout the lesson**

Archer, 2018

Success Criteria Checklist

I create and set success criteria for my learners OR create the success criteria with my learners.
The success criteria are:

- Performative (they are visible in the lesson)
- Linked to learning intention
- Easy to understand
- Written in language that learners understand.
- Specific, concrete, and measurable
- Scaffolding to support learner performance.
- The basis of feedback (teacher feedback, peer feedback, self-evaluation)
- Supported by necessary exemplars or work samples if needed
- **Revisited throughout the lesson**

Archer, 2018

A routine to consider	High-quality success criteria should:
1. Learning intention statement constructed using active verb, specific to skill, knowledge, or understanding and written in developmentally appropriate language. 2. Unpacking of learning intention with class at the beginning of lesson. 3. Constantly displayed during class. 4. Use of examples and learning connected to learning intention. 5. Use of performance of understanding (what learners are doing, saying, making, doing, or writing) to link to learning intentions. 6. Learning related to the learning intention is formatively assessed during the lesson. 7. Progress related to the learning intention is reviewed with the class at the end of the lesson. Randall, 2020	- Focus on the end-product - What should learner know or be able to do at the end of the lesson or sequence of lessons? - Avoid vague or fuzzy terms. Example: Learners will appreciate diverse perspectives. Better: Learners will demonstrate consideration of divergent perspectives in their analysis of historical events by outlining the key views held by at least two key subgroups. - Appropriate level of specificity Too broad: Learners will think critically. Too specific: Learners correctly answer the critical thinking item on the final exam. Better: Learners will analyse and evaluate arguments related to reasons for historical events. - Use concrete action words and relate to Bloom's taxonomy. Too fuzzy: Know, appreciate, understand, be encouraged. Better: Describe, write, create, explain, demonstrate

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CURRICULUM DESIGN – SCHEMES OF WORK: DEFINING BEST PRACTICE

Learning intentions

Learning intentions are inputs in curriculum design and lesson delivery. They directly inform success criteria.
They serve an essential purpose in helping the learners in our class understand what they will be learning and how they can make progress.

Signal to learners: "Where am I going?"
Statement that explicitly describes what learners should **know, understand, or be able to do** as a result of teaching and learning.

- to understand
- to know
- be able to do
- Learning intentions identify new learning and focus on transferable skills

Archer, 2018

Effective learning intentions are:

- **Clear:** In terms of content and language, learning intentions must be crystal clear for every member of the class.
- **Specific:** The teacher and learners know exactly what needs to be learned and how.
- **Desirably difficult:** The level of challenge provided by the learning intentions should be desirable for all learners.

Success criteria

Success criteria are a performative output in a lesson and sequence of lessons. They are visible in a lesson and over a sequence of lessons. They are directly informed by learning intentions.

Should be a feature of a scheme of work to support consistent high-quality practice.
Can provide a way of assessing learner understanding or mastery of learning.
Can provide guidance for teachers around differentiated practice.
Should be carefully unpacked with learners to support high expectations and can be co-created with learners for some tasks.

Wiliam and Leahy, 2015

Signal to learners: "How am I doing?"
Describes what successful attainment of the learning intention looks like.
Are performative by design.
Success Criteria are the measures used to determine whether, and how well a learner has met the learning intention.
Allows the teacher and learners to make judgements about the quality of the learning.

Archer, 2018

Shirley Clarke (2008) states that once learners have success criteria, they have a framework for affirmative dialogue, with other peers or teachers, this enables them to:
Ensure understanding.
Identify success.
Determine difficulties.
Discuss strategies for improvement.
Reflect on progress.

Clarke, 2008.

How do Learning Intentions differ from Success Criteria?
Learning intentions - descriptions of the intended change in long term capability.
Success criteria - descriptions of desired performance in learning tasks.
Learning intentions and success criteria differ not in their specificity, but in what they refer to. The distinction is important because learning is a change in long term capability, so learning cannot be judged in the moment.

Sequencing

Sequencing – the logical ordering of learning activities is foundational to high quality scheme of work development.

- Global before local: focusing on conceptualising the whole task before executing the parts.
- Increasing complexity: Meaningful tasks gradually increasing in complexity.
- Increasing diversity: practice in a variety of situations to emphasise broad application.

Collins et al, 1991

Classroom practice scaffolds + Tikanga, Ako and Mahara

Scaffolds, resources, and teaching approaches should be selected to support Learning Intentions, Success Criteria and scaffold toward assessment. They are not in and of themselves a scheme of work. Supportive commentary is ideal for developing classroom practices that enable Tikanga, Ako and Mahara in action.

Formative and Summative Assessment

Formative and summative assessments are critical elements of schemes of work.

Formative Assessment

Should be geared toward "identifying supports for teaching."

Needs to have the following features:

Specific: focused on narrow concept domains – to allow precise gaps to be identified.
Frequent: building on the idea of regular retrieval to develop long term memory.
Repetitive: To ensure skills and retrieval are practised in a focused manner.

Summative Assessment

Should be aimed at "creating shared meaning" – has meaning beyond an individual classroom allowing comparison.

Needs to have the following features:

Standard Conditions: Time, resources, assessed task.
Scaled Scores: Allowing comparison between classes.
Sampling a large curriculum domain: Supporting broad curriculum delivery.
Infrequent: Supporting teachers in having more time to teach.

Sherrington, 2017

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CURRICULUM DESIGN – SCHEME OF WORK EXAMPLES

Developed by L. Wing and J. Heneghan, 2022-2023

Figure 1: Scheme template components with commentary (under yellow sections)

Topic or unit name:						
Assessments:			These are included to support mindful planning and scheme use			
Other relevant dates for this unit:						
Title of lesson or lesson sequence	**Timing** This can be the number of lessons and/or date/week indications	**Big Idea(s), Significant learning, or Key idea(s)** Please consider NZC refresh UKD approaches and/ or NCEA Change package supports.	**Learning intentions** Signals to ākonga: "Where am I going?"	**Success criteria** Signals to ākonga: "How am I doing?"	**Sequencing and scaffolding commentary** Please consider: How this lesson or sequence of lessons fits within the wider sequence of learning Supports a non-expert would require when delivering this learning	**Suggested Resourcing** (files or links)
This is simply an identifier	This is to ensure that approaches are consistent and teachers know what they are working with	Starting with curriculum links supports alignment to the UKD model. It also feeds directly into the learning intentions and success criteria model.	This grounds the lesson or lesson sequence in the acquisition of skills and knowledge.	This allows us to plan and know from the get-go, our checking for understanding and formative assessment approaches.	This ensures that teachers know why they are teaching this lesson or lesson sequence *and* know how to effectively teach the lesson.	Shared resourcing to support consistent and high quality practice

Figure 2: Senior Scheme exemplar

This is a possible approach to a senior scheme aligned to the NCEA Level 1 change package. Only the first lesson has been included here to support brevity.

Title of lesson or lesson sequence	**Timing** This can be the number of lessons and/or date/week indications	**Big Idea(s), Significant learning, or Key Idea(s)** Please consider: NZC refresh UKD approaches and/ or NCEA Change package supports.	**Learning intentions** Signals to learners: "Where am I going?"	**Success criteria** Signals to learners: "How am I doing?"	**Sequencing and scaffolding commentary** Please consider: How this lesson or sequence of lessons fits within the wider sequence of learning Supports a non-expert would require when delivering this learning	**Suggested Resourcing** (files or links)
Introduction to Race	W1, T3 One lesson	Knowledge: Power relationships often drive history	We are learning about the key concepts of power, race, ethnicity, and racism	I can define and describe the key concepts of power, race, ethnicity, and racism. I can give examples of what they are and are not	This lesson introduces and unpacks the concepts of power, race, ethnicity, and racism. This lesson builds on some of the learning from the land activism unit. It sets the unit up to explore how these concepts are connected. There will be some challenging elements in this lesson. Engage with sensitivity, know your learners, and reiterate the importance of respectful dialogue.	Placeholder. Put resource here.

Figure 3: Junior scheme exemplar

This is a possible approach to a Y10 Social Science scheme. Only the first lesson has been included here to support brevity.

Title of lesson or lesson sequence	**Timing** This can be the number of lessons and/or date/week indications	**Big Idea(s), Significant learning, or Key Idea(s)** Please consider: NZC refresh UKD approaches and/ or NCEA Change package supports.	**Learning intentions** Signals to learners: "Where am I going?"	**Success criteria** Signals to learners: "How am I doing?"	**Sequencing and scaffolding commentary** Please consider: How this lesson or sequence of lessons fits within the wider sequence of learning Supports a non-expert would require when delivering this learning	**Suggested Resourcing** (files or links)
Amazon Intro	One to two lessons. W7, T1	Connection, globalisation. Ngā ahurea me te tuakiri kiritōpū | Culture and collective identity Movement within and across borders impacts on people and places. Interactions change people's culture and identity, communities, and countries. Te whakaaro huatau | Thinking conceptually In my learning in te ao tangata | social sciences, I can: • apply conceptual understandings across contexts and case studies in order to develop generalisations	We are learning about the Amazon - a connected and significant region of the world.	I can describe key features of the Amazon to a peer. I can explain to a peer how the Amazon is connected to the world naturally and culturally in a SEAL paragraph.	This lesson is the first of a bank of lessons designed to introduce the Amazon as a significant and connected part of the world - naturally and culturally. Teachers will need to collect the class map sets and be familiar with the lesson content ahead of time. It is helpful and engaging to provide opportunities to allow learners to share and explore their prior knowledge with their peers and the wider class.	<<Amazon Icon Map.pdf>> <<Do now Brazil Icon Mapping Tasks.pptx>>

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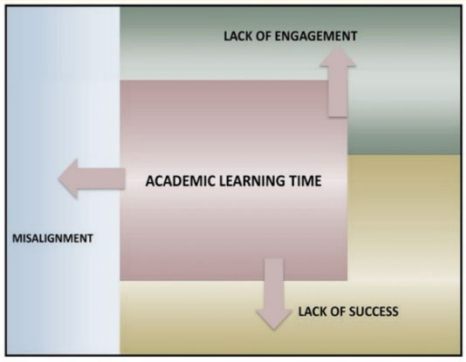
CURRICULUM DESIGN – SUPPORTING LESSON PLAN PREPARATION

Considered instructional design is critical in ensuring high quality pedagogy. It is scaffolded by clear lesson, unit planning and schemes of work.
The Aitken model of practice is helpful when considering highly effective pedagogy.
Great teaching seeks to maximises "academic learning time" through highly aligned and engaging teaching and learning activities that support students in feeling successful as learners and being able to demonstrate their learning.
To below framework is intended as a suggested support to instructional design considerations.



Source: Associate Professor Graeme Aitken, Faculty of Education, University of Auckland

In a lesson plan the following should be considered:

- The classroom environment and routines that are supportive of student learning.
- Prior learning, subject specific knowledge, and associated pedagogical scaffolds and approaches.
- Appropriate assessment for learning activities

There is a lesson planning template on the following page. Feel free to use this and adapt as required. You may also wish to consider the College "Principles of Exceptional Learning", wider professional learning support as described in Tino Akoranga and the "maximising learning" graphic to support your development of a lesson plan.

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CURRICULUM DESIGN – LESSON PLAN TEMPLATE

Lesson title:
Lesson focus:

Class:
Year/Level:

Relevant Assessment:

Additional considerations:

Learning intentions:

Success Criteria:

With regard to the specifics of your lesson please consider how learning is scaffolded and secured and how from a teacher and a student's perspective resources and activities are effectively used.

Timing	Lesson component	Resources	Rationale and Commentary.

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