Student Agency and Metacognition
Waimairi-iri Kāhui Ako– Community of Learning
Christchurch, New Zealand.

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Introduction.

This article centres on a group of leaders and teachers in four schools in Christchurch who decided to concentrate on metacognitive learning as a means of delving deeper into student agency. The four schools are Tūora Fendalton School, Te Ara Maurea - Roydvale School, Harewood School-Te Kura o Tāwera, and Breens Intermediate School. These schools are part of the Waimairi-iri Kāhui Ako, in the Christchurch region https://waimairi-iri.nz . A 'Kāhui Ako' is representative of a Community-of-Learning, which involves a group of people coming together to grow knowledge and improve the way they go about doing things. This Kāhui Ako chose the name Waimairi-iri, the 'wai' refers to water and 'iri-iri' is the immersion in the water of the springs in the local streams.

The back story to the four schools becoming interested in metacognition and student agency is a good example of the way effective Kāhui Ako are using networked learning as a means to cover multiple priorities. Interest emerged when Fendalton Open Air School joined a 'Foundation Learning' trial in 2018-19, involving 33 schools from across Aotearoa-New Zealand. The focus of the trial was to consider the capability of Year 1-8 students to reflect, adapt and set new goals as they went about their learning. *Infinity Learning Maps* were used as the tool to place the students at the centre in the trial (Annan & Wootton, 2017). Research into the trial was conducted over three-months. The research investigated the types of changes made by 319 students, their teachers and parents to support students to address a learning challenge. The results indicated;

> *"That each group made qualitative changes in the way they supported new learning. Students' selected challenges moved from general to specific and the strategies they used changed from reactive, passive responses to those involving active learning."* (Annan.J., Annan, B., & Wootton, M., 2015).

The student-led mapping activities and associated research findings from the trial struck a chord with the Tūora Fendalton School senior leadership team in terms of positive value for students, teachers and families. The leadership team spread the news within their Waimairi-iri Kāhui Ako, which led to the Infinity Learn Ltd facilitators sharing the learning maps approach in a Teacher Only Day.

Interest grew across several of the Waimairi-iri Kāhui Ako schools and subsequent follow-up PLD sessions were set up. The aim was for interested leaders and teachers to trial the use of the Infinity Learning Maps tool. Once they understood the purpose of the tool, they could then weave the ideas into their regular routines. The intended outcome was a student-led habit of reflecting on their learning, and setting immediate goals to adapt how they were going about learning-how-to-learn. This habit-of-mind represents metacognitive learning,

which is a student's self-regulation or understanding of their thinking. More specifically in these cases, it refers to student's planning, monitoring, controlling, and reflecting to confront challenges in their learning (Meverech, Z. and B.Kramarski.,2014). As the PLD sessions progressed, interested leaders and teachers from the four schools ended up committing fully to the opportunity to go deeper. Judy Harford, deputy principal at Fendalton School, explained her growing interest,

> *"We plan to use Learning Maps at our 'Knowing the Learner' conferences at the beginning of the year now we have built a shared understanding with all stakeholders, of the language and understanding of agency and of goal setting. Excited to be part of this."* (Harford, J., email, 8th December, 2022).

While the four schools associated with this article delved deeply into the metacognitive aspects of student agency, other schools in the Waimairi-iri Kāhui Ako chose to explore other aspects of (i) hauora-wellness of life, (ii) cultural responsive practice and, (iii) ako – reciprocal and collaborative learning. This article is an opportunity for the four schools to share their learning journeys with their Kāhui Ako colleagues and other interested readers.

The article has three sections. *Section One* introduces the concepts of metacognition and student agency. The section also reinforces the need for metacognitive tools, such as Infinity Learning Maps, to support students to reflect, adapt and set new goals as they go about their learning. The *Second Section* outlines the learning journeys of each of the four schools. These case studies explain how the students engaged in metacognitive learning beyond the mapping exercises to create a habit-of-mind around reflecting, adapting and setting new goals. In the *Third Section*, themes are discussed that emerged from the schools' explorations. The concluding statements suggest that where schools support students to grow agency and form alliances to become co-agents, they will cope better with the growing number of challenges that they are likely to face as they step further into the 21st century.

SECTION ONE. Student Agency and Metacognition.

Four schools in the Waimairi-iri Kāhui Ako – Community of Learning, decided to explore more deeply into the concepts of metacognition and student agency. A quote from Raewyn Saunders, Principal of Tūora - Fendalton School, sets the scene….

> *"[We] have identified that a strength is that our students feel respected and enjoy school but they have less confidence about really knowing themselves as learners and many do not know how to talk about their learning. We had identified that knowing more about themselves as learners and how they learn best would be a focus for 2020".* (Saunders, R., Expression of Interest, Foundation Learning Trial 2019).

This introductory quote from Raewyn mirrored the overarching aim of the four schools in Christchurch to position the students at the centre of learning-how-to-learn.

This aim of students being able to understand and articulate themselves as learners mirrors a global dilemma whereby a focus on metacognitive learning in many schools has remained in the shadows. Charles Fadel[1] came to Aotearoa-New Zealand in 2019 to explain to Kāhui Ako leaders the four-dimensional learning framework – see below.

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[1] Fadel is a global education leader and researcher from the Centre for Curriculum Redesign at Harvard University.

Four Dimensional Learning (Fadel, Bialik & Trilling, 2015).
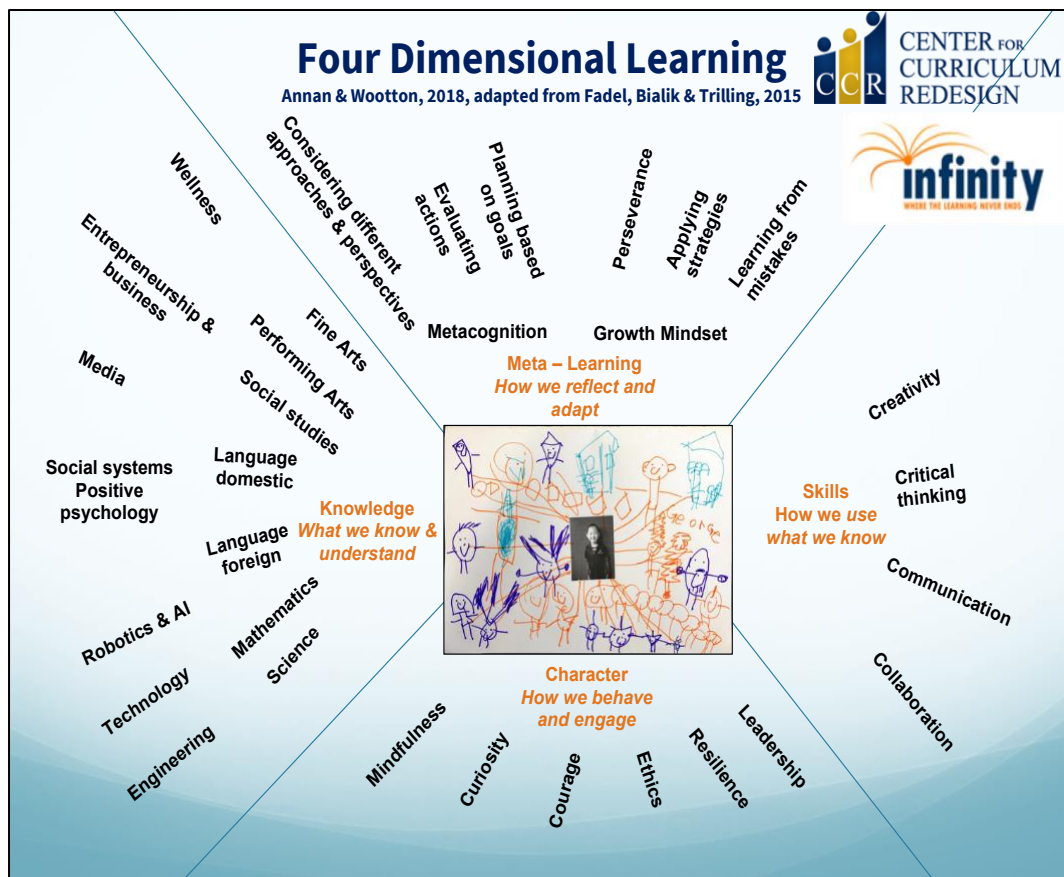
Fadel noted that three of the four dimensions in the framework have featured strongly in schooling in the past; content learning to the left, skills to the right, and character below. Meanwhile, the fourth dimension at the top of the framework, meta-learning, a derivative of the science of learning, is a relatively new learning dimension for schools.

Governments, teaching professionals and society at large are now taking more notice of metacognitive learning. However, there is a lag in students learning about that dimension, metacognition more so than growth mindset. One possible explanation for the lag is that teachers believe they are responsible to lead the meta-learning dimension through the traditional teacher (active), student (passive) learning relationship. Another explanation is that practical tools and resources are only just emerging to bring meta-learning alive with students at the centre of that learning. Those explanations suggest students generally remain passive receivers of information about new concepts and are not active creators who influence the concepts and add new dimensions.

Engaging students in meta-learning is an ideal in-road to fully understand the value of student agency for learning and living into the future. That term 'student agency', as understood in the context of the OECD Learning Compass 2030, is rooted in the principle that,

> *"students have the ability and the will to positively influence their own lives and the world around them. Student agency is thus defined as the capacity to set a goal, reflect and act responsibly to effect change. It is about acting rather than being acted upon; shaping rather*

than being shaped; and making responsible decisions and choices rather than accepting those determined by others." (OECD. Student Agency for 2030).

This is where Infinity Learning Maps come into play. The mapping activities are designed to ignite student agency. The mapping approach is consistent with the global OECD definition of student agency; reflecting, setting goals, acting and shaping. These match-ups between the global trends espoused by OECD and the Infinity Learning Maps, is what principal Raewyn Saunders was looking for to support Christchurch students to understand their learning and articulate their unique interactions within their chosen learning environments.

In brief, the Infinity Learning Maps encourage teachers to facilitate a process by which students pull out ideas from their minds about a particular learning situation and draw a picture of the ideas in the form of an 'interactive web' https://bit.ly/InteractiveWebInfinity Four prompts activate the mapping https://bit.ly/InfintyMapsPrompts
- the people who help me learn,
- the tools that help me learn,
- the places that help me learn, and
- the interactions that help me learn.

Students then analyse their maps to identify an improvement goal. Part of the analysis is to talk with peers, family members and teachers, who critique and challenge their thinking. Those conversations prompt students to reflect, decide on a goal, and adapt the way they learn. Student adaptations centre on their learning environment and/or their relationships. They then positively assess their efforts in achieving their goals, as, 'I got started', 'I am making progress', 'I am almost there', or 'I made it'.

Infinity Learning Map. Jade, Year 4 at Harewood – Te Kura o Tāwera.
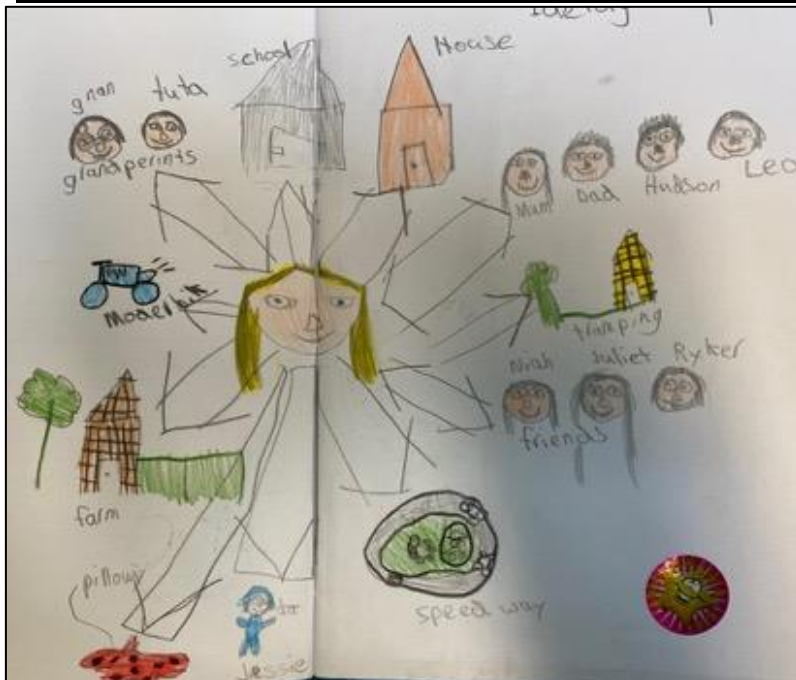
The Infinity Learning Map to the left was created by Jade, a year-4 student from Harewood - Te Kura o Tāwera school, in the Waimairi-iri Kāhui Ako. Her map shows her initial thinking around the people, places, tools, and interactions that help her show courage. The mapping exercises support students to clarify their learning connections and relationships, and in doing so see greater relevance in their learning.

The following set of interconnected ideas were used to design the Infinity Learning Maps approach to create this positive trajectory, (Annan, J., Annan, B., & Wootton, M, 2015).

Three theory ideas ensure safety and positivity as the students complete the mapping exercises,

➢ The first theory idea is the 'interactive' nature of the mapping activities, which is consistent with *ecological learning* – people living in relation to one another and their environment.

➢ The second idea comes from *narrative theory*. All students hold stories in their minds about themselves as learners. They tend to act consistently with these stories. The good news is that negative stories can be re-scripted.

➢ The third theory idea centres on *appreciation*. An appreciative perspective is about casting a positive lens on situations and building on the supports that already exist. Students who engage in learning as a positive experience are more likely to learn and be happy.

SECTION TWO. Case Studies of four schools.

Once the mapping exercises were fully understood, each school planned a way forward to go deeper into meta-learning through student agency. In doing so, the students, teachers and families co-constructed their learning journeys, which represented co-agency as distinct from student agency,

> *"Co-agency is when teachers and students become co-creators in the teaching-and-learning process. The concept of co-agency recognises that students, teachers, parents and communities work together to help students progress towards their shared goals."* (OECD 2030 vision)

The following four case studies show how each school developed their own strategy to go deeper into agency and co-agency.

Case Study One.
Harewood School - Te Kura o Tāwera
Janine Kroening.

Setting the scene
Harewood School started exploring student agency as a school-wide priority in 2022. The programme covered metacognitive learning-how-to-learn in a comprehensive way after being introduced to Infinity Learning Maps. All students explored: parts of the brain; electrical signals in the brain; sensory system within the brain; how stress affects the brain; growth vs fixed mindsets; active vs passive learning; our learning strengths; and what is the learning pit? A broad set of goals were attached to the programme; students becoming life-long learners, coming to understand their learning, setting goals around their learning,
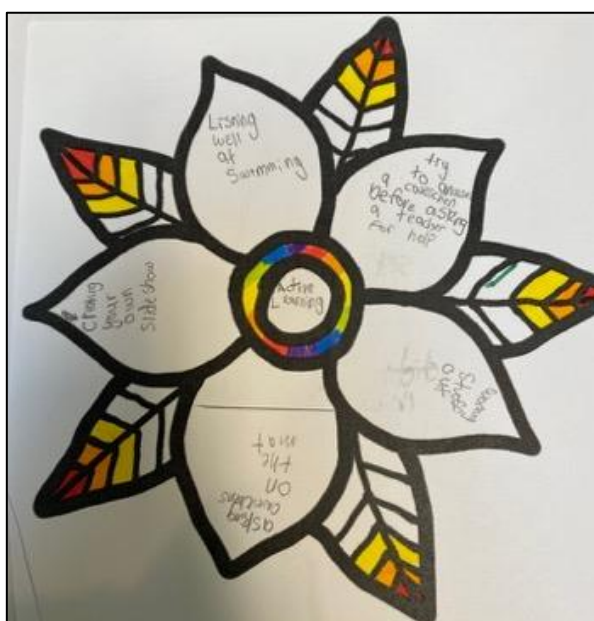
and sharing their learning journey with whānau and future teachers. The Matai Year 2-3 team, went on to delve deeper into this learning, using the Infinity Learning Maps.

The Harewood agency and co-agency story, **Matai Year 2-3 team.**
The learning-how-to-learn programme was initiated in term one, 2022. As part of this learning, an Infinity Learning Map was created based on a general learning situation. Children were encouraged to think about one aspect of their learning i.e. literacy or mathematics, and focus on the people, places and tools that help the learning. Students were supported to come up with a goal based on their learning map. Notably, all students wanted to create an academic goal. This theme suggested that the students were focused on learning content ahead of developing learning habits, and were heavily reliant on their teachers to set goals.

In term two, teachers concentrated on shifting the student focus from learning content to learning-how-to-learn. The teachers chose three learning capabilities to make the shift. These were mindfulness, **courage** and collaboration.

Year 3 student, Baylee's Infinity learning Map, from Harewood School

My goal is to speak in front of adults. Don't give up when something's hard.
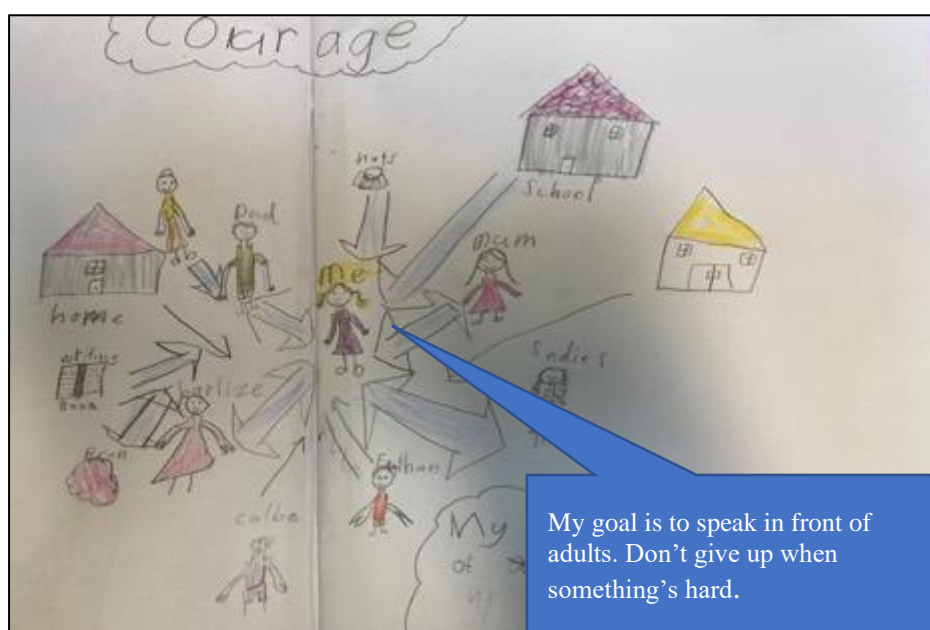
As part of the whole class teaching, the teachers unpacked what these capabilities were and how they supported the students in their learning. Once students had a good understanding of these capabilities, they created another learning map based on one of these areas – see 'courage' map above. Students were encouraged to choose the capability that they thought was their greatest challenge out of the three options. Teachers and students then co-constructed a goal based on the students' maps. Students collected and analysed data based on their maps. They looked carefully at areas that showed active not passive learning. Goals were recorded with tick boxes for children to fill in when they had achieved their goals. Weekly, the children got out their maps and reflected on their goal. Just prior to mid -year conferences, students also recorded a video of them explaining their map to whānau.

In Term 4, all children across the school, created a learning map about how they learn, to share with their future teacher as well as whānau. These maps were passed on to the child's new teacher. Some Year 6 maps were passed onto intermediate schools to help with transitions. Before school started in 2023, whānau were invited to a 15-minute conference

with their child and their child's new teacher. During this session, learning maps were used as a tool for a discussion led by the student about their learning style and learning needs. This gave students the opportunity to tell their new teacher about their strengths and interests before the new year started.

Feedback was overwhelmingly positive:

- Parents
    - Fantastic! Amazing with teachers understanding and connections with students before school starts.
    - Successful, especially with child being in a new team. Relaxed and familiar, didn't feel rushed. Liked learning maps. Strong focus on relationship.
- Teachers
    - Great to have school time to connect with learners
    - Made the first day so much easier
    - Children talked more confidently because they had the map as a guide
- Students
    - It was fun talking about what we like doing and what sports I play. I was excited to start school again. (Year 0-2 student)
    - I really enjoyed it because we were talking about how school would be and about ourselves. (Year 2-4 student)
    - It was quite nice to be able to say what my strengths were and what I needed to work on one-on-one with the teacher. (Year 5-6 student)
    - It was nice to hear so many good things about my learning. It made me feel proud of myself and want to make my learning even better. (Year 5-6 student)

With the different mix of students coming into the Mataī team in 2023, teachers noticed that students were very reliant on teacher direction, seeking reassurance for instructions in every lesson. As a result of this, the teachers and students decided that their first learning map of the year would focus around their school value of 'initiative'. This value was unpacked over a number of weeks prior to the students creating their learning maps. Once again students co-constructed a goal with their classroom teacher, then collected and analysed data to assess progress.

The next area of learning focused on Te Whare Tapa Wha, a Te Ao Māori model of holistic wellbeing represented by a wharenui – meeting house.   The four walls of the wharenui represent the four dimensions of your holistic wellbeing. Taha Wairua | Spiritual wellbeing. Taha Hinengaro | Mental and emotional wellbeing. Taha Whānau | Family and social wellbeing. This model of wellbeing was introduced across the school. Janine's syndicate spent the whole term unpacking and understanding the four walls of the wharenui, (i) Taha Wairua - spiritual wellbeing, (ii) Taha Hinengaro - mental and emotional wellbeing, (iii) Taha Whānau - family and social wellbeing, and (iv) Taha Tinana - physical wellbeing. Once again children were asked to choose one area of wellbeing that they felt was needing the most improvement. A learning map was created based on this area. Children again created explanatory videos - https://bit.ly/learningmapHarewood2023, and co-constructed goals based on their learning maps.

The final learning map of the year was completing a learning map for the child's future teacher. Due to the success of this the previous year, both students and teachers felt like this was an important tool to ensure an easy transition to their next class.

Outcomes

An overall outcome of the agency journey at Harewood was a focus-shift away from deficit grading of content learning towards positivity around learning-how-to-learn. Students in Janine's syndicate started to understand how they learn. As that understanding grew, they appreciated that each student's different perspectives and approaches to learning added to a rich learning environment. Rich language and discussions were taking place between students and teachers, as well as between students themselves and with whānau. Students could clearly explain their ways of learning to peers, whānau and their future teachers. Those learning conversations reinforced to the students that their unique ways of learning and successes were valued. During conferences with whānau, children were more confident sharing their learning journey with their families and what their next learning steps were.

Students were not left to their own devices. Learning goals were based on the map the students had drawn, but were co-constructed by the student and teacher. These goals were not set for the sake of it, a common frustration in learning when you never get around to achieving the goals. Goals in this case were regularly reflected on and modified.

The perceived role of the teacher has begun to shift from "the teacher tells me what to do" to " the teacher supports what I want to learn." This became evident when students were co-constructing their goals later in the year. When asked what the teacher can do to support the student with her/his goal, students at the start of the year commented "the teacher will tell me to do my goal", or "the teacher will remind me to do my goal". Later in the year replies to this question led to further discussions around resources needed, or systems that need to be introduced such as a buddy system.

Whole class trends were identified and shared among the students. These trends then became the basis of new learning and had relevance to the students. Students began to focus less on task-based content learning. They grew their knowledge around learning behaviours such as showing courage or using their initiative. This focus-shift led to more accelerated learning in both learning-how-to-learn and in foundation content learning. Literacy data 2022 and 2023 was analysed using matched data – same students

Literacy Data	2022 % at or above expected curriculum level	2023 % at or above expected curriculum level
Reading data	75	88
Writing data	78	83

A structured literacy programme was introduced during this time so the improvement was maybe due to this as well as the learning map learning. However the culture shift that happened as a result of the learning maps definitely contributed to these literacy results

Next steps in Janine's syndicate are to continue to use Infinity Learning Maps as a tool to delve deeper into the way student's learn-how-to-learn. Those investigations will motivate

students to learn about other key capabilities that support their learning and explore new learning goals. They will also motivate teachers to continue researching and adapting learning programmes to encourage active learning and student agency.

Case Study Two.
Te Ara Maurea – Roydvale School
Michaela Johnstone & Jenny Washington.

Setting the scene

During the PLD sessions to learn about the Infinity Learning Maps approach, Principal, Jenny Washington, and Lead teacher, Michaela Johnstone-Walter, were enlightened by the idea that students could have more say in the way their school was moving forward. They reflected on survey results with parents and the nature of the school website. Their reflections suggested there was little, if any, input from the students. Jenny trialled a group of students collaborating with her to analyse writing achievement results and immediately valued their input. Michaela then set up a Year 5 & 6 student group interested in reporting on everyday school events and activities, thereby forming the *School Reporter* group.

Those initial trials created positive momentum. Michaela stated,

> *"Our intentions from the outset were to create life opportunities for our students to have more agency in our kura-decision making process, involved in all aspects of our school – not tokenistic agency."*

What is the Reporter Group?

The reporter group is a group of students who write articles about events around the school. We publish these onto the school website pānui.

These intentions fit with educational theory that student agency is about students exerting influence on their learning environments and their lives (Klemenčič, 2015). Students reflect on their power and will to influence, then as they see themselves becoming more influential, they proceed to positively alter their behaviours around engagement.

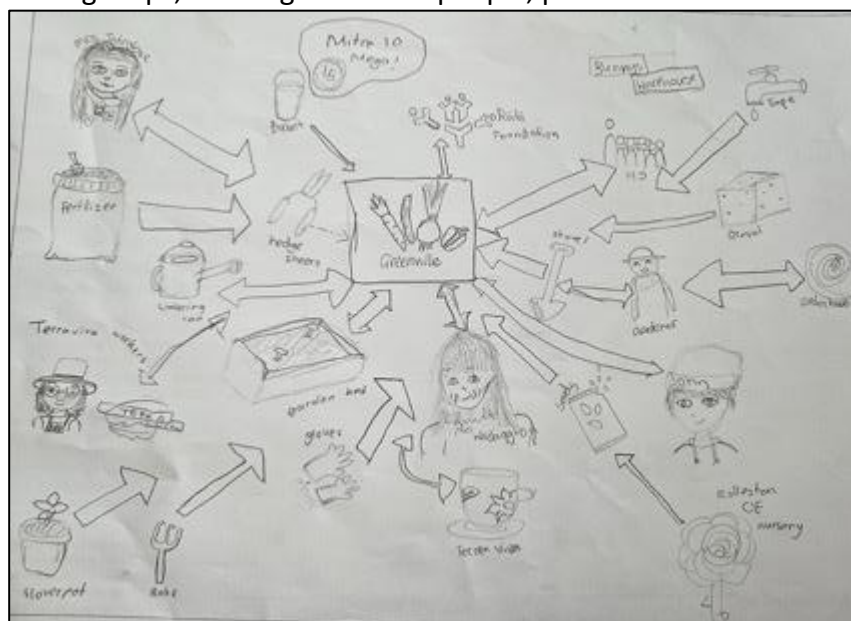*The Roydvale agency and co-agency journey*

Michaela met weekly with the Reporter group. The students collaboratively used a google doc for their meeting agendas, to add ideas, make comments and suggestions and record meeting information - 2023 example. Michaela noted,

> *"Since our inception of the reporter group, it has turned into much more than just reporting on school events. The reporters have made community connections with building contractors, charity organisations (Full Bellies), Christchurch City Council, and are involved with decision making in our school, and have met with the board of trustees."*

Student mauri ora – lifeforce grew as they experienced mana orite – equal power sharing with the school board of trustees, city council members and community organisations. The students in the group said,

> *"We were very proud to have been able to talk in front of such special people. We enjoyed it because it is a special opportunity to share our job with important members of the school. Thanks to the board for making space for us to share"* (Jaimee, Sofia & Eve, 2023).

As momentum grew, the nature of the student-led inquiries broadened. A group of reporters became interested in looking at student attendance data. They met with Jenny, the principal, about improving the attendance data. The group co-analysed the school data and came up with 10 ideas to improve attendance. They wrote bi-weekly reports and gave handy tips and tricks to the school community via Jenny's (the principal) posts on the school website. Jenny reported an improvement of attendance in 2023 Term 3 and 4 , after the attendance group was formed.

Another group of students formed the Greenville Group to work on the school garden. In 2023 term 3 the students used Infinity Learning Maps as a tool to make connections with people, places or companies that could support them with their garden. Students worked in groups and made their learning maps, thinking about the people, places and tools that they needed/could use in the garden. As a group, they first looked on Google Maps and found Roydvale school. They looked around their school on the maps and brainstormed businesses close by. They thought about how these businesses might be able to help them with their garden.

After their Google Maps search, the students in groups created their maps. Once they finished their maps, they then discussed the arrows and interactions between the garden and the people, places and tools. In their groups they decided on what business/tool they wanted to focus on. Once decided they found the businesses online. They entered the contact details into a shared document. They then crafted an email template together. The groups then emailed their respective businesses. They heard back from Bunnings Airport, who provided them with a voucher to help with buying new tools. Reporter Group article on this.

The Greenville Group also inquired into their parent community. A theme of the maps were that all groups knew of whānau who were avid gardeners or who had knowledge about planting. In 2023 term 4, the group looked back over their Learning Maps with the view of contacting whānau to see if they could support the gardening venture.

Outcomes
An overarching outcome from the Roydvale agency and co-agency inquiries was success in students becoming actively engaged in the kura-school decision making process. Michaela

stated, *"The students LOVE being in their interest groups! They are excited about their contributions!" (Michaela Johnstone-Walter, 2024).* Students started to take the lead. They were co-investigating, co-analysing, collaborating in ways that brought teachers, students and their families closer together. The reporters became an avenue for school-home communication as the parents did not know what was happening in the school. Jenny, the principal, talked about attendance and nobody really listened. When messages came from the students, the parents sat up, took notice and supported. Jenny and Michaela were by no means offended by this development. To the contrary, they marvelled at the transformation.

Sitting underneath that overarching outcome, were several other outcomes that contributed to important school-wide improvements. Rather than pre-determine the outcomes, Jenny and Michaela were willing to 'go with the flow'. Their theory-in-use was to get going and see what outcomes emerged. It was a matter of not limiting the students. They did not want to put the students in a box and get stuck with pre-determined progressions.

There were at least three outcomes that emerged from the interest groups within the Reporters Group.

1. The groups contributed to improved attendance. Efforts from the reporters who focused community attention on attendance made a valuable contribution to lift attendance to 92 percent in 2023 Term 4. Students in the group analysed the data and made links to attendance solutions. Jenny, principal, said *"These students have got it – how can we channel our communication through them. They are so much more authentic, parents stop and take notice"* (Jenny Washington, 2023).

2. The groups contributed to improved writing – see table below. Over three particularly challenging years, overall shifts have been made from 65 to 75 percent of students achieving at or above the curriculum expectation. Other strategies were put in place, but students operating in interest groups and writing for relevant audiences appears to have increased motivation in writing.

	2021	2022	2023
% At and Above	65	70	75
% Below and Well Below	35	30	25
Writing Curriculum Level Achievement 2021 - 2023 2021 - 2023			

3. The groups contributed to improved self-reflection and adaptions in their writing. reflections on the impact of the reporters group on their writing include,
   - It helped me use more creative words and get better at writing an event that has happened,
   - Being part of the reporter group has helped me write more formally,
   - Working collaboratively with other people, and
   - I have learned how to hook readers in and I have also learned to use more adjectives.

Jenny and Michaela commented that the writing outcome is more about the capabilities coming through in the writing. For example, students were learning to talk with people they had never met and articulating those experiences in text, a competency that is not typically attended to in regular classroom writing lessons.

Students involved in the Roydvale interest groups are influencing the school culture in positive ways. As the Roydvale agency and co-agency journey evolves, students, teachers and families are learning to co-teach and co-learn with one another. 'Ako' – reciprocal learning. The emphasis of the Reporter Group has been to create modern-world sensible social media between schools and homes. The student's leadership is starting to create a responsive, engaging and mature social media. How good is that in a world where social media has become a major societal problem? What next in the Roydvale agency and co-agency journey? Priorities will, no doubt, come from the collective in relation to addressing school-related issues.

Case Study Three.
Tūroa Fendalton School
Cain Cunningham & Judy Harford.

Setting the scene

Fendalton School started to delve deeper into ākonga agency in 2019. Teachers and students started by using Infinity Learning Maps and went on to explore competency-based research about competencies that students will need to succeed in learning and living as the 21st century unfolds.

Two teachers, DP Judy Harford and lead teacher Sue Gordon, discovered the Infinity Learning Maps tool as part of their involvement in the Foundation Learning strategy. Ākonga drew their maps and reflected on their learning situations by analysing the people, places, tools, and the interactions that they had drawn into their maps. Judy and Sue agreed that the learning maps were a valuable metacognitive tool as ākonga who trialled the mapping activities developed a strong understanding of what it meant to be an active learner and why active rather than passive learning was important to succeed.

Once Infinity Learning Maps as a metacognitive tool was cemented among a few teachers and leaders, interest grew to introduce the approach school-wide. DP Judy summarised the optimism among students and teachers who had trialled the mapping exercises, *"Students understood more about their learning, how they learned and the barriers they had. It was a powerful tool for self-reflection." (J. Harford, 2020).* The senior leadership team remained cautious until they heard their two lead teachers articulate the positive outcomes, and saw the results from the students. They provided ample evidence for the senior leadership team to agree to diffuse the metacognitive agenda across the school.

From that point, interest grew among all the staff to learn more about metacognitive learning. Most importantly, the learning had to go beyond teacher PLD to include the students and whānau. The venture became a community-of-learning priority among teachers, students and whānau.

Tūora Fendalton Agency Story

As Fendalton School moved into 2021 and 2022, the leadership team made a commitment to diffusing the deeper-level student agency ideas that had developed in the 2019-20 trials

into the teams across the school. Junior school teachers started with a relational approach. They introduced Identity Maps to the students as a means of new entrants developing a sense of belonging before delving into Learning Maps and the curriculum.

Meanwhile, the middle and senior school teachers immediately embarked on a three-step process of students utilising Learning Maps; (i) to learn how to reflect and adapt regularly, (ii) to develop positive growth mindsets around learning competencies, then (ii) to utilise those reflective practices and positive mindsets in action-based learning projects. Students came to the fore through their engagement, while teachers across the school observed students creating their maps and heard their voices as they shared their authentic selves. Teachers found it considerably beneficial to prioritise spending time actively watching and listening to students as they understood more about their learning.

The in-road into students learning about capabilities for success was an exploration of Charles Fadel's research at the Centre of Curriculum Re-Design at Harvard University. That research focused on the competencies that ākonga need to become successful 21st Century Learners. The table below lists 13 competencies down the left side of the graph in order of importance for students to acquire new jobs as they emerge in the 21st century.   Acquiring content knowledge is the least important. While knowledge content learning remains the most popular in school systems world-wide, Fadel advocates greater emphasis on students learning the other 12 competencies, during content learning lessons and in experiential learning.

The leadership team and teachers at Fendalton saw the logic in Fadel's research and determined that they would get started with six of the 12 competencies. They called these six concepts 'character and skill capabilities'; Courage, Mindfulness, Curiosity, Ethics, Resilience and Leadership. Their rationale was that students needed those competencies to ensure they could be successful in any context or challenge they faced.

As the various relational and metacognitive developments progressed across the school, Theresa Pearson, the middle school team leader, wanted a way to document student growth through the maps. She believed it would be valuable to have more information about students' perspectives into their learning progress as they moved through the school. That idea led to the introduction of a Learning Journey book. This book would be introduced at year 1 and follow ākonga through to year 6. In the Learning Journey book, ākonga added each learning map. It was then possible for ākonga, teachers and whānau to view and reflect on past maps. Note below the simplicity of a learning Map in Year 2 and the progress that can be achieved as they move through to Year 6.

Progressions of maps.

Year 2	Year 6
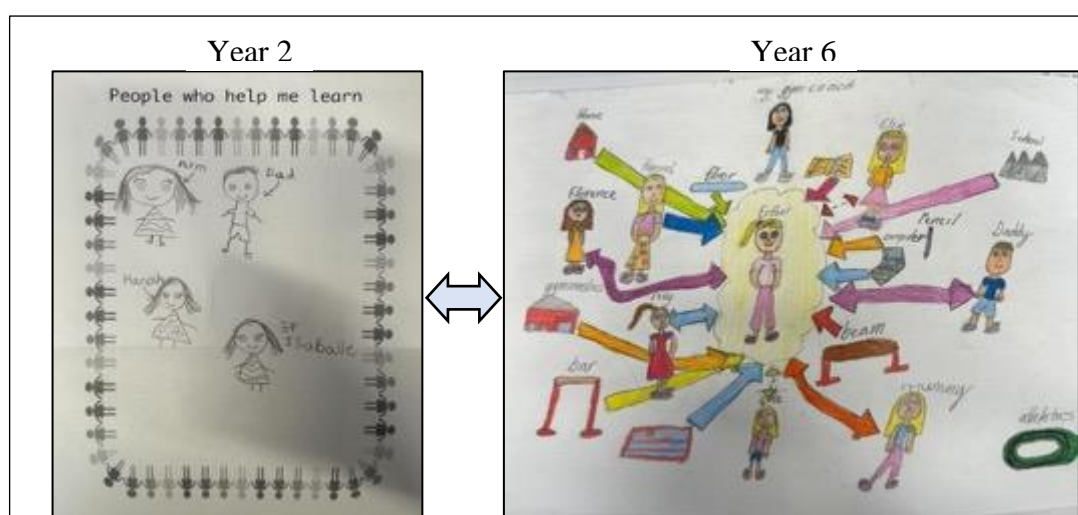
The senior school looked at next steps for ākonga after understanding the learning maps, then realising the usefulness of the six priority character and skill capabilities. Teachers in the senior school knew students would not fully understand the impact of the capabilities until they experienced them in action. An authentic context was crucial to launch the character and skill capabilities. They decided on 'Wearable Arts' as a vehicle for ākonga to identify the capabilities they needed to work on. Ākonga were encouraged to reflect and set goals for themselves regarding each of the capabilities.

"The learning that inspired our Wearable Arts was our capabilities webs and learning maps. Our message is to let your capabilities blossom" (Isabelle Donaghy, Year 5 student 2022). This mindset gave ākonga the skills they needed to be successful through a self-directed learning process of designing and developing a Wearable Art. It also gave them the opportunity to lean into the capabilities that were most useful for the task at hand.

Outcomes

In 2023 and 2024, the school began each of those years with 'knowing the learner' conferences with whānau. The Identity Maps for new entrants and Learning Maps for older students facilitated deep conversations about ākonga strengths and goal setting for the year ahead. Whānau were able to identify and celebrate their child's strengths through a capabilities lens. The conversations were less about subject areas and were more focussed on how we behave and engage as active learners. Through the past two years, the capabilities are now living and breathing concepts through the school. They sit alongside the school values. Ākonga and whanau together can identify which capabilities can help them reach their goals throughout the year.

Ākonga at Fendalton now reflect and adapt in a number of ways on their goals and capabilities. They can now more easily articulate their next steps in learning and action. This metacognitive and growth mindset learning has been powerful when the school lead up to major events such as school camps. The capabilities are used to set goals to ensure students are successful through challenging and less familiar experiences. Scarlet, a year 5 student makes the point,

> *"Courage helped on camp because I wanted to climb to the top of the tall tree but I was feeling scared. Once I had done the climb I felt proud of myself. So courage helped me accomplish something I was scared of doing."* (Scarlett Summerfeild, Year 5 Student).

Year 6 ākonga went on to use their Infinity Learning Maps to help smooth the transition to intermediate school. The maps were used to facilitate discussion with the next year's teacher to help them better understand their new students as learners.

Lead teacher, Cain Cunningham, concludes by making an overarching statement about the value of prioritising metacognitive learning,

> *"The real success for our kura has come from our character capabilities being firmly embedded in our school. They, alongside our values, are living and breathing. The language of Courage, Curiosity, Ethics, Mindfulness, Leadership, and Resilience is used by our students in learning conversations. This is evident through goal setting for school camps or when undertaking our restorative justice approach; students can identify that they may not have used their Ethics. It is also powerful to see whānau use the same language outside of the classroom."* (C.Cunningham, 2024).

Tūroa-Fendalton aim to instil the capabilities into their children so they can be successful learners inside and outside the classroom.

Case Study Four.
Breens Intermediate School - Te Puna Waiora o Hereora
Julian Josland & Debbie McGrath.

Setting the scene.
Breens Intermediate have explored Infinity Learning Maps for several years as a tool to help children make connections to learning for a range of curriculum areas. The school initially used the mapping activities to support students in the Accelerated Learning in Mathematics (ALIM) programme, for a couple of years in 2015 and the Accelerated Learning in Literacy (ALL). This was useful in setting up the children so they could identify and access different people/places/tools that would help them and also light their interests to the subjects.

Initial value of Infinity Learning Maps at Breens

- *Learning maps gave a lot of information about the learner.*
- *Helped the boys make links with their everyday life and experiences to writing.*
- *Showed their likes/dislikes.*
- *Common trends found:*
- *All children prefer to write on computers rather than pen and paper.*
- *"It makes my writing look neater". "If you make a mistake you can fix it quickly".*
- *"It is easier than writing. If you make a mistake you can just backspace it".*
- *All children enjoy listening to music.*
- *Sports, video games and cars are high interest topics.*
- *Mums, Dads, brothers and friends help them with their writing.*

In 2020, the Waimairi-iri Kāhui Ako heard about the Infinity Learning Maps from the two creators of the tool, Brian and Mary in 2020. Their evidence-based research and documented success helped to raise awareness and build further confidence in going forward with this more in depth in classes. The next schoolwide approach attempted to create Learning Maps for each curriculum level. The table to the right shows that teachers initially found value in the approach, but the process became difficult to manage as other priorities took over.

After consultation with teaching staff, it was decided that the school-wide curriculum approach was too ambitious. As a result, it was thought better to focus the maps on something more manageable, like student-led reflection.

'Reflection' was always the last thing on the priority list, even though teachers could see the value. The process of Learning Maps continued into math extension students through an initial action plan and green screen videos having students talking about their Learning Maps and also a 'pathways to Progress Racetrack'. This was a template that had been used in previous years for acceleration programmes to help students track their progress. This approach got traction with the students and successes were shared with the wider staff.

Breen's Intermediate agency story.

In 2021, Julian and Debbie started working with Brian and Mary. One teacher from each team worked through the process of Learning Maps with their class, with the aspiration that the ideas and routines would eventually take off in the other classes.

Julian and Debbie spoke with other schools in their Kāhui Ako, about how they were using Learning Maps in their classes. The pair from Breens shared their successes, with specific changes around Maths acceleration (that had a focus on one subject area), reflective practices and communication between home and school.

In 2022, Julian and Debbie introduced their approach to the whole school, with the purpose of explaining the how and the why of using learning maps. Most teachers seemed enthusiastic and collectively agreed they had a number of passive learners. They decided to take Julian and Debbie's lead and focus on agency (students taking ownership of their own learning), ubiquity (rather than one subject area), and picking up on ideas from students who used learning maps in their contributing schools.

Five steps guided the teachers through the mapping exercises:
(1) Students complete the Learning Map with the standard prompts: People that help them learn, Places that help them learn, Tools that help them learn, and the interactions that are

represented by arrows showing how much these people/places/tools help them learn. These arrows were indicated by different thicknesses (Even dashed or wobbly to represent an ambiguous relationship or connection to learning) and also double arrows to show how learning can be reciprocated.
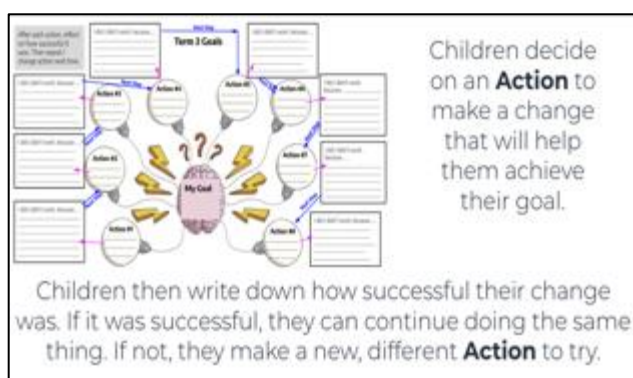
(2) Students analysed their learning maps by comparing trends and data to themselves and that of the wider team and school. This was achieved by having students complete a survey and enter questions about their maps. Data was then collated and presented to the students, who reflected on the trends they identified. From the discussion generated, the children could see what areas and connections they could improve on. It was also interesting to see who they thought helped them (e.g. mum, dad, friends / home more than school). Also, students did not think of themselves as a resource. The majority of their arrows of learning were pointing towards them.

(3) Students reflected on the class data and compared this to their own individual learning map. They wrote down similarities and differences, and most were able to record a video of their reflection via a Flipgrid reflection.

(4) The students' recording of themselves speaking about their Learning Map on Flip(grid) got better at this as time went on, as students became more confident and took on a more professional 'get the job done' of filming themselves. Students were also to view each other's Flipgrid video reflections and add a comment, as a peer-to-peer critical review, with some recording a video of themselves giving feedback. This created a chain of videos from one original reflection.

(5) It was planned for students to focus on commenting on the content of the Flipgrid conversations, rather than how they said what they said. As students progressed through the five steps, they started learning about the meaning of Active and Passive learners and what this looks like. Teachers made a point of integrating that learning into lessons, to ensure it was explicit and understood.
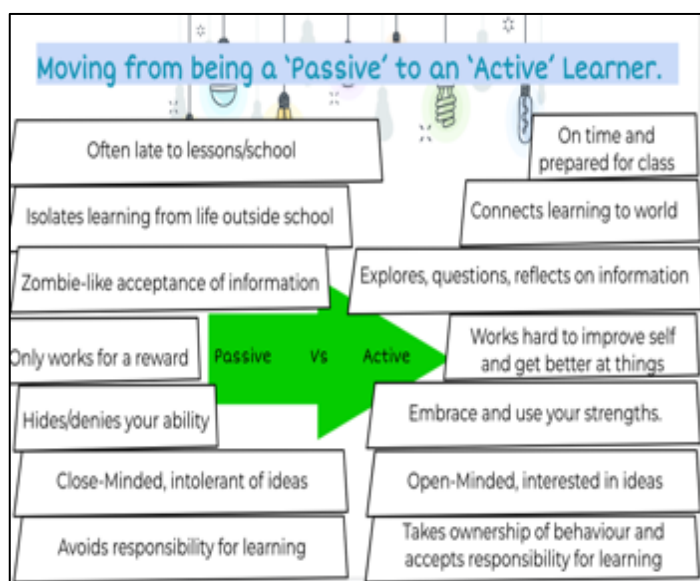
Action plans.

Children decide on an **Action** to make a change that will help them achieve their goal.

Children then write down how successful their change was. If it was successful, they can continue doing the same thing. If not, they make a new, different **Action** to try.

The next phase of the plan was to have students set goals for themselves, now that they had a better understanding of what it meant to be an effective learner. After careful consideration and having a look at what had been done before, Debbie and Julian came up with an Action Plan template that the children could use to record their progress towards a goal. Every week, children were required to make a change in something they were already doing, and reflect on whether or not this helped them get closer to their goal or not. They would then decide to make another change, or keep doing more of the same so that they would become closer towards their goal. Explicit teaching of practical examples of student study habits linked to

metacognitive learning-how-to-learn competencies, as well as introducing SMART goals was part of the plan.

The main intent was to put their reflection and goal into their action plan every week. At minimum, they have to have an action which will help them achieve their goal. Then, in turn, they reflect on the action. Did the action work in terms of helping them get closer to their goal. Yes or No? Their reflection also was to include why the action was useful or not. This action plan can last all term. Some students achieved their goals before the end of the term, so in consultation with the teacher they set a new goal and started again.

Video reflection on action plans.
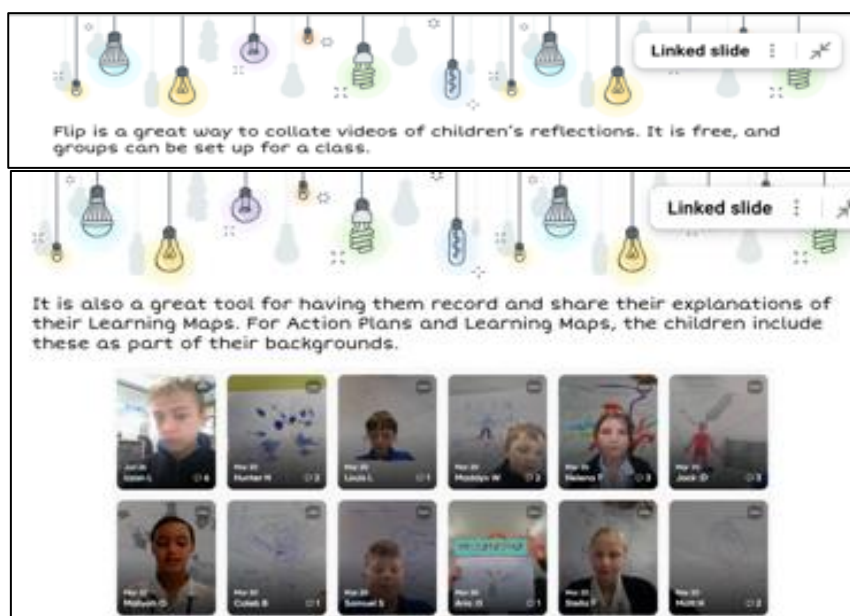
Once students completed their Action Plans, they were to record themselves on Flipgrid (Flip). They talked through their goals and what they did to achieve it and articulated what worked well and what did not and why. After this, they were asked to again comment on two other student's reflections on their Flipgrids.

Outcomes.
Outcomes in the Breens Intermediate School story centred on growing student learning talk. Qualitative data showed that the use of the Flipgrid tool in the classroom and student leadership in whānau learning conferences significantly and positively lifted the quality of student learning talk.

Flip.
The purpose for using 'Flip' was two-fold. Firstly, to achieve a sharp focus on reflection and make sure the mechanics of that focus were technologically and pedagogically higher quality than in the past. Second, for students to get used to seeing themselves on screen.

Julian claims, "Adolescent students can tend to become self-conscious around video-scribing themselves. Many use icons, cover their faces and let themselves down in the way they express themselves." Repetitive use of Flip grows maturity and focus for on-screen learning conversations. Flip was used to grow student learning talk around reflection, sharing and critical feedback. First, Flip was used by students to discuss their Learning Map. Every time and every term. Second, students used Flip to share their action plan and discuss their steps. Third, Flip was used to reflect on how successful the students were: Did they meet their goal? Have they become more active / more agentic? Have they strengthened any of their connections?. Fourth, Flip enabled students to share their reflective thinking with others. Fifth, Flip, provided verbal and recorded feedback on how well others, at least two others, have been working. Whānau learning conferences Students have been using their Learning Maps and Action Plans as a starting point to talk more about their learning. The in-class reflective pedagogy has reduced teacher talk and increased student learning talk. Student talk is also now leading whānau conferences. The approach has had a big impact on the effectiveness of learning conferences for both parents and students. Feedback from parents has been that they were very impressed with how their children were able to articulate what they have been learning, why and how.

Next Steps.
Moving forward, Breens is keen to formalise student-led reflection into regular classroom routines. The plan is to include reflective statements in their weekly Ako sheets. The aim is to also make room in the timetable weekly to ensure students are creating valid and workable Action Points and having time to reflect on them. Having accessibility (Other students, whānau, teachers) being able to view the reflections also puts an onus on the students to take the videos seriously, so that their content is to a high standard, and not just the quality of the presentation.

For accountability, students can share their reflective statements face-to-face with another student, like a critical friend. This lateral accountability would be based around their action point for the week, explaining why it did or did not work. Students can use this time to get ideas and advice from other students and reciprocate by sharing their ideas and giving advice back. In 2024, Breens has been working on using Action Plans for children to set goals to become more active in their learning in general, rather than just focusing on academic achievement.

These next steps are more realistic and manageable than the original attempts to introduce a grandiose school-wide curriculum strategy. Having the students create digital artefacts to record their successes and failures is also a useful tool to measure their engagement and progress towards becoming more active in their learning.

SECTION THREE. Discussion: Themes from four Case Studies
Brian Annan, PhD., and Mary Wootton.
An analysis of the four case studies identified a set of themes that are relevant to metacognitive learning and student agency in schools in the current education environment. By 'current environment' we mean the intense change process around the New Zealand curriculum and the volatility and uncertainties that people face as they move deeper into the 21st century. Exploring curriculum interests and equipping students with competencies

to deal with complex challenges they will face in their futures is what these case studies are all about.

Theme one is that the four schools saw value in a structured start to understand the metacognitive and agency concepts, before they delved deeper. Participant teachers and leaders found the initial structure created by the Infinity Learning Maps approach supported them to get students into a space where they believed in themselves. Students could articulate their learning situations. They saw things in their learning that they could not see in the past. They became motivated to improve. The students were at the centre, starting to realise that they were agents capable of learning-how-to-learn. As the schools delved deeper, the four schools used diverse strategies,
  ➢ At Harewood – Te Kura o Tāwera, a lead teacher and her team chose a community-of-practice approach to go deeper while the rest of the school explored other priorities,
  ➢ Te Ara Maurea - Roydvale developed interest groups for students to influence their learning environments,
  ➢ Tūroa Fendalton chose a school-wide competency-based approach, and
  ➢ At Breens – Te Puna Waiora, two lead teachers created genuine reflective action in mathematics lessons then went more broadly across the curriculum.

The shift from structure to diversity motivated participants to follow their students' interests and needs. In turn, the students exceeded expectations, had their hearts on fire, and made a difference in their schools and communities. These lofty outcomes indicate that schools can energise students to deal with the multiple challenges in our modern world.

A second theme was teaching professionals truly positioning students at the centre of the mapping activities. Those activities involved students engaging in data analysis and using their data to improve their learning and influence their school communities. This re-positioning of students from passive to active brought new insights for the teaching professionals. Julian, lead teacher from Breen's Intermediate, noted that there was value in student-led reflecting and adapting, but it was last on the priority list. The Breen's story reversed that perspective. Jenny Washington, principal of Roydvale School, was more sceptical about students grasping meta-learning. Her scepticism turned to delight as energy mounted among her staff who appreciated the immediacy of students reflecting and achieving their learning goals. Furthermore, Jenny was staggered as the students' confidence grew around how to reflect, set goals and adapt.

All of the case studies indicated a switch from,
  ➢ Content-knowledge lessons whereby teachers teach students about reflecting and adapting, with teachers giving students feedback about what they know and what they do not know (Agarwal & Bain, 2019), to
  ➢ Teachers facilitating a process where students discover what they needed to adjust in their learning after retrieving information from their minds, analysing it and, making decisions about their next steps with support from the teacher, peers and family (Annan, Annan & Wootton, 2015).

A third theme in the case studies was a shift in thinking about assessing outcomes, with narrative (qualitative) data coming to the fore and sitting alongside number (quantitative)

data. The main motivation for this adjustment was because student responsibility increased around explaining their learning and the improvements they were making. Students loaded their data into a Google form. They co-analysed the data to identify a goal for improvement. They then assessed their progress. Then, they discussed their data sets with their teachers and parents, and from those conversations lifted their learning to another level. The learning conversations assuring mana ōrite – equal power sharing, and communicated positive messages among students, families, and teachers. Staff confirmed that these rich learning conversations motivated students to attend school, engage in learning and achieve desired outcomes. They also motivated parents to engage more with their children's learning.

A fourth theme was that many of the students realised they could positively influence their learning environment, rather than it always being the other way around. The first in-road to this realisation was the students feeling safe when talking about their Infinity Learning Maps. The maps were their own, so was the data. Only the student could tell the story sitting behind the map. The students saw their teachers, parents and peers hearing their stories. As the Te Ara Maurea - Roydvale reporter group found, they were being heard, and the environment was changing because of their actions.   As confidence grew, the students' analytic and explanatory skills lifted, and in turn, the students were motivated to influence the way things happened in their learning environments. This development mirrors the theory of *student* agency that recognises students' capabilities to intervene and influence their learning pathways and educational environments (Klemenčič, Bergan and Primozič, 2015).

The final theme was the shift from teacher-led analytic and assessment-focused decisions to a sense of collectivism. This shift represented an indigenous Māori concept called 'whai whakaaro' – time to reflect together on progress. The concept is pivotal to the Ministry of Education's inquiry approach, called He Pikorua, to respond to the needs of diverse learners (Ministry of Education, 2020). Much pressure is removed from teaching professionals' shoulders when data analysis and decision making is distributed evenly among teachers, students, and families. This does not mean teachers opt out of responsibility. Rather, as shown in the case studies, teachers became facilitators, supporting students and families to engage in rich conversations to inform their decisions. Collectivism at the grassroots of the education system can generate positive stories for all students. Positive, forward-facing thinking has the power to support students to rescript negative stories they may hold of themselves, freeing them to strategise and learn.

Conclusion.

The shift from self-managing, to relational, and now to reflecting together in New Zealand's schooling system indicates an evolving response to emerging multidimensional challenges as the 21st century unfolds. The case studies presented in this article leveraged off data conversations between students, teaching professionals, and families to raise students' motivation, engagement, optimism and achievement. These four schools illustrated that supporting students to link data about their own learning to practical goals can improve immediately improve learning.

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