Keeping children engaged and achieving through **rich curriculum inquiries**

TEACHING APPROACHES AND STRATEGIES THAT WORK
He rautaki whakaako e whai hua ana

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Education Review Office
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AND ACHIEVING THROUGH
RICH CURRICULUM INQUIRIES

Introduction

This Education Review Office (ERO) report is one of a series of reports on teaching strategies that work. It features strategies and approaches that we observed in 40 primary schools selected from across New Zealand. These schools came from a database of 129 schools, all with rolls of 200 or more, in which the proportion of students in the upper primary years (Years 5 to 8) achieving at or above the expected standard had increased. In each case, achievement levels were also above average for the decile.

We asked leaders in each school what they saw as the reasons for their school's positive achievement trajectory and then investigated the teaching strategies that had been implemented, and the outcomes.

This report shares some of the strategies and approaches used by schools that had focused on improving achievement through rich curriculum inquiries. It also shares some of the simple strategies used in classrooms where the inquiries had positively contributed to raising achievement in literacy and/or mathematics.

Why ERO focused on curriculum design

ERO's findings from the past decade indicate that more is required to increase teachers and leaders appreciation of the permissive nature and intent of *The New Zealand Curriculum*[1] and to implement responsive curricula in their schools. New Zealand prides itself on its child centred approach to learning, yet school practice is not consistently matching this rhetoric.

Some schools' innovative approaches to designing their curriculum help children engage with the knowledge, values and competencies to equip them well to enjoy future success. However, in other schools, children seldom have the opportunity to enjoy a curriculum that encompasses all the principles, competencies and learning areas.

1 Ministry of Education. (1993). *The New Zealand Curriculum*. Wellington, New Zealand: Learning Media Limited, 7.

The New Zealand Curriculum includes the following:

> the **Vision** explains what we want for our young people to become confident, connected, actively, involved lifelong learners
> the **Principles** relate to how the curriculum is formalised in a school and explain what is important and desirable in a school's curriculum
> the **Values** outline the deeply held beliefs that are encouraged, modelled and explored as part of the everyday curriculum
> the **Key Competencies** determine five competencies people use to live, learn, work and contribute as active members of their communities
> the eight **Learning Areas** combine to provide students with a broad, general education that lays the foundation for later specialisation.

The principal function of *The New Zealand Curriculum*[2] is to "set the direction for student learning and to provide guidance for schools as they design and review their own [local] curriculum." In acknowledging that context matters, the intent of *The New Zealand Curriculum* is that schools develop local curricula for their students that are challenging, engaging and relevant. Each school is expected to design a bespoke school curriculum that takes account of the vision, values, key competencies, learning areas and principles of *The New Zealand Curriculum*, while also focusing on the school's own local priorities and values, and the strengths, needs and interests of their students.

While a school's curriculum framework is intended to provide information about the requirements and boundaries of students' learning, teachers have latitude to interpret and adapt the curriculum in light of what they know about the students in their own class and school.

Including aspects that have particular significance for school communities in the local curriculum should ensure that learning has meaning for students and is supported by their families and the wider community.

2 Ministry of Education. (1993). *The New Zealand Curriculum*. Wellington, New Zealand: Learning Media Limited, 6.

ERO's *School Evaluation Indicators: Effective Practice for Improvement and Learner Success* outline how teachers are expected to use the curriculum to benefit students.

The curriculum is enabling and future focused and is intended to promote self efficacy. This requires a learner centred approach, where teachers choose contexts and design learning opportunities in discussion with their students, and support them to work collaboratively on challenges and problems set in real world contexts.

A responsive curriculum incorporates connections to students' lives, prior understandings and out of school experiences. It draws on and adds to parent, whānau and community of pools of knowledge. Student identities, languages and cultures are represented in materials used in the enacted curriculum. Cultural and linguistic diversity are viewed as strengths to be nurtured.

Through our national evaluation programme ERO has found that children experience widely divergent opportunities to learn within and across schools:

> There is some confusion around the different intent and role of the principles, values and even the key competencies of *The New Zealand Curriculum* in improving outcomes for all students. Rather than using the principles as a starting point for curriculum design, they have often been something that has been grafted on to the curriculum retrospectively, if they have been considered at all.

> In schools where curriculum principles are most evident and teaching as inquiry is well supported at the school level, leaders play an active role in supporting teachers' work in the classroom. Effective leaders bring clarity to teachers' thinking and practice. Specifically, they initiate discussion about aspects of *The New Zealand Curriculum*. They also develop systems that promote coherence and uniformity, such as planning formats and guidelines for undertaking inquiry. Above all, leaders promote a culture characterised by high expectations for student achievement, shared aspirations to improve teaching, and a desire to work collaboratively.

> As schools develop their curriculum they should take into account the cultures, interests and potential of all their students. Many primary and secondary schools do not adequately draw upon contexts and themes relevant to diverse learners. While references to diverse students might appear in the overarching statements of a school's curriculum, classroom planning and practice frequently misses opportunities to reflect the culture, knowledge and understanding of these learners and their families.

- Many teachers are not making use of valuable information about students' cultural backgrounds to plan programmes that celebrate and further extend students' understanding of their own and others' rich and diverse cultural backgrounds.
- For students whose strengths and passions lie in science, social studies, technology, health and physical education or the arts, there can be long periods of time when these learning areas are not part of their curriculum. Some important aspects of learning are neglected and curriculum often lacks depth across these learning areas.
- For example, our study of the teaching of science in Years 5-8 found that teachers tended to subsume science into other learning areas, meaning students had few opportunities to experience science as a pure discipline. Teachers missed opportunities to meaningfully promote literacy and mathematics learning through the science programme. Schools' approaches lacked attention to both the science curriculum knowledge strands, and the overarching nature of the science strand, meaning students' learning was neither balanced nor comprehensive.
- An impediment to good science programmes was teachers' limited subject/content knowledge, and knowledge of the most effective teaching practices for fostering science learning. Typically, science programmes lacked depth, coherency, and the necessary focus on interactive and experiential learning that leads to deep understanding and engagement.

When children's diverse cultures are not recognised or parts of the curriculum are neglected in a school's curriculum, children are less likely to develop the values, knowledge and competencies that will enable them to live full and satisfying lives.

ERO's Evaluation

How did we undertake this evaluation?

In Term 4, 2016 we visited 40 full primary or contributing primary schools across New Zealand. These were selected from a database of 129 schools, with rolls over 200. These schools were chosen because increased numbers of students were achieving at or above National Standards in reading and writing or mathematics (or both) as they moved through Year 4 to Year 5. These schools' achievement levels were also higher than the average for their decile.

Before each visit, we sent the school a set of discussion points and questions for leaders to consider. In many schools, the whole staff looked at the discussion points together and identified areas that warrant further investigation. We asked leaders what they saw as the reasons for their positive achievement trajectory, then looked for evidence of the approaches and strategies used and the outcomes, by:

> talking with children, parents, teachers, leaders and, where possible, trustees
> observing in classrooms
> looking at documentation, student work, class displays and the school environment.

What we found in the schools designing and implementing a rich curriculum

Leaders and teachers in the five schools featured in this report had carefully designed a coherent curriculum to make sure their students could learn, achieve and progress in the breadth and depth of *The New Zealand Curriculum*. The schools had systems in place to make sure children engaged in learning activities that integrated their local priorities and all the learning areas, values, principles and key competencies from *The New Zealand Curriculum*.

Each of them had termly inquiries where they focused on a selected topic that would help children build their knowledge and capabilities across the learning areas. Their inquiries combined group tasks, practical activities and digital tasks for deep learning. Highly engaging learning activities provided students with authentic learning opportunities that responded to their interests and built on their prior knowledge.

School leaders played a key role in the effective development, planning, coordination and evaluation of the school's curriculum, as well as ongoing curriculum review and development. In most of these schools, planning for term inquiries started with the principal and the senior leadership team. The curriculum was flexible and no longer relied on static long term plans that are less likely to cater for the strengths, needs and interests of the current students.

The schools used different approaches and strategies to:

> determine and respond to local priorities
> set initial inquiry questions
> check how well the new inquiry allowed students to engage with different learning areas
> model best practice for designing a rich integrated inquiry
> integrate literacy and mathematics teaching and learning into their inquiries, matched to the students' strengths and needs
> identify professional development needs to increase teachers' content, subject and pedagogical knowledge to maximise student engagement.
> establish approaches and times for teachers to work collaboratively (planning and teaching)
> work with teachers to prepare detailed guidelines, cycles and progressions to highlight expectations for students and teachers
> respond to students' culture and heritage
> utilise parent and community input into the implementation of the curriculum
> introduce processes for both teachers and students to reflect on outcomes and engagement during the inquiries
> work with external providers or other schools to further develop their curriculum and teaching.

Leaders' full involvement in the curriculum planning, monitoring the implementation and reflecting on practices helped make sure students had effective, sufficient and equitable opportunities to learn.

In most of the schools, teachers were increasing opportunities for student involvement in planning the direction of the inquiry took. Inquiry topics were deliberately broad to allow students to follow their interests and passions. Teachers involved children in different ways:

> using student reflections from previous inquiries to determine the context for the next inquiry
> seeking students' ideas when planning the new inquiry
> providing students with some initial learning activities to determine and build on their prior knowledge before establishing the aspect the children wanted to focus on
> using home learning opportunities to find out more about and respond to students' diverse cultures
> using student surveys to determine levels of student engagement.

Students were positioned at the centre of teaching and learning and were able to participate and learn in caring, collaborative, inclusive learning communities.

In three of the schools, effective and culturally responsive pedagogy supported and promoted student learning. Leaders and teachers gave considerable priority to responding to children's culture and heritage. Leaders, teachers and trustees at one of the schools worked with a cluster of schools to better understand the local history and share their successful approaches to helping all students and teachers to learn te reo, me ona tikanga and kaupapa Māori together, through local contexts. The other two schools used successful strategies to know and respond to students' cultures and build on their prior knowledge. They also sought community and other resources to explore contexts from the students' cultures. Whānau and community knowledge, language and culture, as well as student identities, were represented in curriculum materials and the enacted curriculum.

The curriculum approaches and strategies that worked

In the following pages we share the narratives of five schools. Although ERO investigated curriculum developments across all the year levels in the school, we have mostly shared specific aspects for children from Year 4 to Year 8.

01

A curriculum that captures the interests and heritage of the children

SOMERFIELD TE KURA WAIREPO
CHRISTCHURCH

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- Working within a cluster
- Deep learning
- Learning partnerships with children

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AUCKLAND

- Curriculum planning
- Teachers and children working together
- Implementing an integrated curriculum
- Reflecting on practice

TEACHING STRATEGY

01

A curriculum that captures the interests and heritage of the children

ERO's 2010 report **Promoting Success for Māori students: School Progress** concluded that schools needed to do more to promote success for Māori students. Improvement was sought in the achievement of Māori students, the presence of Māori students and engaging Māori students and communities. The report shared examples that show working with local hāpu, iwi and marae increased Māori students engagement.

Leaders and teachers at **Somerfield Te Kura Wairepo** had recently implemented two major curriculum changes. The first gave all children ongoing opportunities to learn about their local history and express their identities. Leaders, teachers and trustees worked with a cluster of schools learn from each other and share the way they taught te reo, me ona tikanga and kaupapa Māori together in context. The second change came about by teachers at the school and in the cluster working as part of a global partnership to foster new teaching practices to help children learn in more depth.

In this narrative we share this school's approaches and strategies for promoting deep learning, focusing on the children's heritage and capturing their interests. We also outline how leaders, teachers and trustees work together across the school and a cluster to share and improve the responsiveness of their school's curriculum.

Curriculum decisions about planning implementation and assessment for inquiry units came from multiple sources. During the past three years teachers were involved in work to deepen children's learning, focus on their heritage and incorporate interest when planning an inquiry topic. To promote a more responsive curriculum, leaders moved away from having a three year plan in curriculum areas other than health and physical education. Their more flexible approach allowed them to better respond to the changing interests, strengths and needs of the children.

Some of their curriculum decisions came from working together with six other schools in the Kahukura Māori Achievement Collaboration (MAC) cluster. Principals and trustees shared practices, discussed programmes and whānau engagement. Lead teachers met regularly to work on or share major projects, celebrations, ideas and resources.

Focusing on children's heritage through a place based curriculum

Leaders aimed to improve the way they developed children's understanding of their local history. This focus was supported in part by the teachers' involvement in the MAC project and Hōaka Pounamu professional learning and development (PLD) that occurred before the schools joined the New Pedagogies for Deep Learning (NPDL) project. Their involvement in the project allowed them to share practices across the seven schools in their cluster and take a lead in this work. As part of this focus, leaders also encouraged teachers to learn new ways of connecting with students and getting to know them as individuals.

Many changes occurred at Somerfield Te Kura Wairepo because of their ongoing curriculum review and development. Their review identified te reo Māori was often taught in isolation without any understanding about what children would learn over time. A small group of teachers worked together to lead the change to have te reo, me ona tikanga and kaupapa Māori taught together, in context. The small group, known as the Māori leaders, placed teachers in groups of three, with each in the group having different abilities and background. Teachers took time to find out their own histories and learned to express them in hui, mihi and pepeha. This helped them situate units of work and activities in contexts that Māori children could relate to. Teachers selected video clips and created resources and shared these with whānau and children.

Teachers modelled learning together through collaborative pedagogies. They sought to provoke children's curiosity about their past and give them opportunities to strengthen and express their identities. The leaders of the Māori programme felt teachers had to go through this collaborative learning before they could confidently follow any agreed progressions. Teachers continued to learn from each other and the first staff meeting each term still focused on related ongoing PLD.

Once the teachers' confidence grew, the Māori leaders developed clear progressions and detailed advice about programmes for children from Years 1 to 6. They wanted every child to learn about all aspects of the past, key to their environment. The school's place based topics are summarised and follow. They balance the local history with learning about science, social studies and technology.

Local Area Overview Plan

Purpose: To educate Somerfield Te Kura Wairepo students about our local area, our local Māori histories and stories, and give them experiences in making connections with the land and its people, over the course of their time at our school.

Year, Topic and Field Trip	Notes
Year 1 **Opawaho te awa** Opawaho River Harakeke weaving	In this unit students learn about the Opawaho River, they learn how Māori and early European settlers used it and the resources it brought. They learn how the waterway has changed over time and how we need to care for it.
Year 2 **Te Tihi o Kahukura** Tamatea Maunga and the Port Hills	In this unit students learn about 'Ngā Kohatu Whakarekareka o Tamatea Pōkai Whenua' – the smouldering boulders of Tamatea Pōkai Whenua. They learn about the volcanic activity that formed Lyttelton Harbour and the history and stories.
Year 3 **Te Maunga me te Awa o Ngāi Tūāhuriri** Maukatere and Rakahuri (Mt Grey and Ashley River)	In this unit students learn about our mountain and river for Ngāi Tūāhuriri iwi. They learn about the flora and fauna of the river and mountain and why Māori settled in Kaiapoi to use the rich resources they had.
Year 4 **Mana Whenua Ngāi Tūāhuriri** Tuahiwi Marae	In this unit students learn about the establishment of Tuahiwi Marae after the iwi left Kaiapoi after it was sacked. They learn about the land being set aside for Tuahuriri under the Treaty of Waitangi and the subsequent building of Mahunui, its life and then the building of 'Mahunui II'. They learn about pōwhiri and marae kawa.
Year 5 and 6 **Te Kaiapoi Pā** Visit to Kaiapoi Pā site and entrance to Pegasus	In this unit students learn about the migration of Ngāi Tahu from the North Island. The establishment of Kaiapoi Pā by Moki and the roles people played on the Pā site. They learn how the Pā was set up and how it worked as the main trade site for the Canterbury area. They also learn about its eventual sacking by Te Rauparaha in 1831-1832 and the scattering of its people.

Each year children learn about and visit a different significant local site. In the first year of the programme a key Māori leader took a leadership role in every team's local site visit. In the second year, the Māori leader initially supported teachers on the visit, but withdrew from the visits in the third year.

Year 2 children on the field trip related to their place-based unit topic

While planning the units, the Māori leaders from the school met with a leader of their local runanga (Ngāi Tūāhuriri) to learn more of the local history, before meeting with whānau to further discuss ideas. The local area curriculum was fully shared and discussed at whānau hui held at least twice a year. One idea the whānau hui promoted was to have as many Māori parents as possible go with the children on the local site visits. Whānau also contributed resources to increase provision of te reo Māori through an extension te reo Māori programme that many children attended and enjoyed.

ERO spoke with a group of Year 6 children about the place based curriculum. They enthusiastically shared the different activities they did at the Kaiapoi Pā led by teachers from their school or from the pā. Some told us about going with their parents to visit their marae in other parts of New Zealand. Children were also aware some of their teachers were learning alongside them.

> People from the marae talked to us about the history and about their ancestors.
>
> Everyone should know the history of their countries and the customs. I'm pleased I know more about this because later on I might need to go to a funeral or something else at a marae and I know what to do. I like having the different experiences because I came from England and I need to know this.
>
> All our teachers can teach us about these things because some teachers were taught more by other teachers and adults that were not teachers.
>
> **Year 6 children**

Māori leaders from the school had shared their placed based curriculum with other schools in the cluster and sought ideas for a sixth topic they could plan for Year 6 children.

Working within a school's cluster to enrich their curriculum

Some of the inquiry learning planning started with the MAC cluster where teachers and leaders from across the schools shared what they were teaching and the resources they used. Resources from other schools were shared and developed further for the rest of the cluster.

While we were at the school, the school's leaders, teachers and others from the Kahukura cluster were in the process of developing an inquiry unit on social justice. The unit Kahukura – Change Makers focused on the occupation of the pacifist settlement at Parihaka in Taranaki.

The topic had links to their local community as some of the men arrested from Parihaka had been taken to the Addington Prison in Christchurch and Fort Jervois on Ripapa Island in Lyttelton Harbour, where they were supported by Ngāi Tahu people. One of the schools had already completed an inquiry into the historic events at Parihaka and suggested this as a likely topic.

However, once the cluster leaders decided to explore the knowledge skills and outcomes possible in this topic, they saw the potential for a major inquiry topic. They then agreed a framework for the first half of the unit and the NPDL leaders decided to focus on citizenship with a unit on change makers. The MAC lead teachers located a series of resources that they placed on their shared website. The chart below shows how the cluster and the school had combined the key knowledge ideas to contribute to deep learning.

Kahukura – change makers unit

Design for Deeper Learning	
Key Question: As a citizen of the world how can I peacefully seek social justice to make a meaningful difference?	
Some of the key knowledge ideas from the MAC cluster	**Enduring understandings about citizenship for deeper learning**
> The people of Parihaka passively resisted their lands being taken. > People and leaders of Parihaka were taken from their lands and their pā was invaded and sacked. > Reconciliation between the people of Parihaka and the crown for these events is still going on today.	> Change can be brought about by peaceful means. > People participate individually and collectively in response to community challenges and have consequences for communities and societies, past, present and in the future. > I am a citizen of the world. I can make a meaningful difference. I seek social justice.

Although the seven schools in the cluster approached the teaching in different ways, a common theme derived from the Parihaka learning: "I am a citizen, I can make a difference" which drove the direction of learning in all schools.

The planning was not completed when we were at the school, however rubrics were already developed that identified how well children considered global issues and how well they used technology for learning. Teachers would use these as part of their planning and assessment.

A key feature of the MAC cluster was the level of involvement of boards of trustees in understanding and supporting curriculum decisions. Twice a year trustees the MAC cluster attended meetings. In the most recent combined meeting, they looked at the Parihaka unit to discuss why schools should focus on this topic. About 60 trustees from the cluster attended the meeting, where a person from Parihaka talked about their history and the links to Christchurch.

They also watched a documentary *Tātarakihi – The Children of Parihaka*. We spoke with a trustee who told us about the recent meetings.

> Most of the things from our history children learn have been influenced by Ngāi Tahu stories but this one has a place in our history because of the people coming to Addington and Ripapa Island.
>
> When *The Children of Parihaka* documentary stopped, there was silence in the room. We were supposed to ask questions but there were none because it was so powerful. Later though we talked about how come we didn't know this from our own history. It is important our children hear and know our history.
>
> When we come to these cluster meetings, it is good to drop conversations about competitions for school rolls and focus on curriculum. Together we have done professional development about cultural competencies and Māori values too.
>
> **Trustee**

Deepening learning

One of the key goals of the cluster was to provide children with a creative and responsive curriculum. All of the schools in the cluster supported this goal through their involvement in a global partnership working with Michael Fullan and Maria Langworthy from the Victoria State Government. The partnership aimed to foster new pedagogies for deep learning (NPDL) in schools and **leverage the power of digital technologies**.

The New Zealand Curriculum and the school's SMART Values, which exemplify the key competencies, guided Somerfield Te Kura Wairepo's curriculum. The key competencies are also closely related to the six underlying concepts of the NPDL framework, which are:

The Six Cs

- Collaboration
- Critical thinking
- Creativity
- Citizenship
- Communication
- Character

SMART Values

- **S**ocially adept
- **M**otivated
- **A**rticulate
- **R**esilient
- **T**hinkers

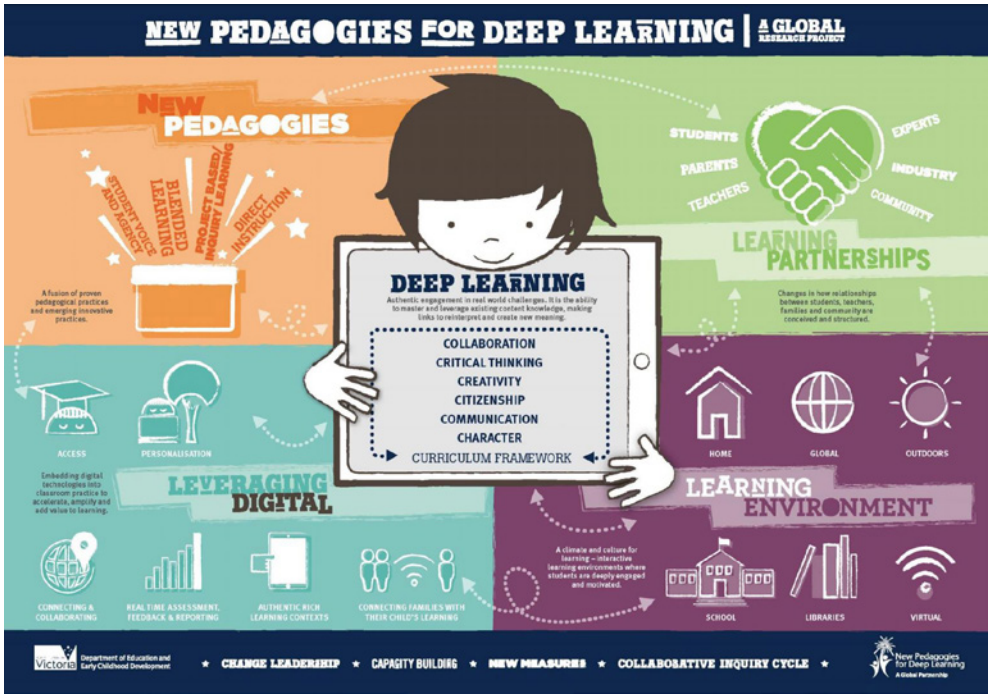
Leaders agreed that many of the pedagogies introduced were good, but they're not necessarily new practices. They acknowledged the key area of change was extending the ability to form partnerships with students in mastering new learning.

When developing inquiry learning unit plans, teachers also deliberately planned for each of the four quadrants from the NPDL framework shown below (new Pedagogies, learning partnerships, leveraging digital and learning environment). Some of the key threads the school focused on included:

> shifting to more of a learning partnerships with children
> developing a place based local curriculum
> enriching their curriculum through working with the wider community.

Teachers worked together to weave together the school's SMART Values and the key competencies. An example of the weaving of one of the school's values and the key competencies is above.

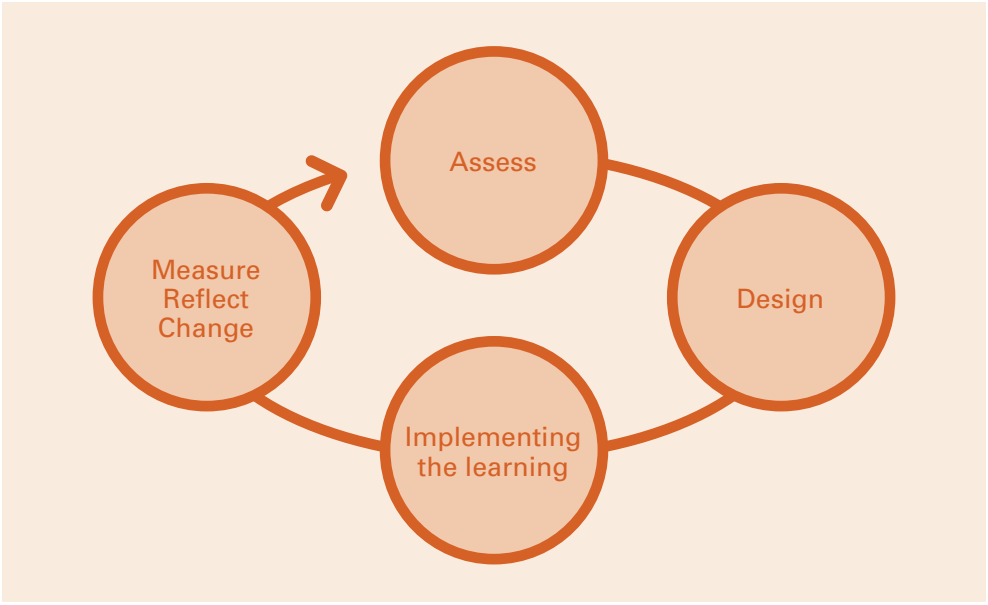
More information about New Pedagogies for Deep Learning can be found using **this link.** You can find the diagram[3] below using **this link**.



3 Adapted from New Pedagogies for Deep Learning (NPDL) Design Protocol © 2014.

Increasing learning partnerships with children

Teachers used a collaborative inquiry cycle they have developed that encouraged them to focus on developing students capabilities with the Six Cs. The cycle began with students undertaking a simple assessment to identify their developing capabilities with the Six Cs.



Teachers designed a pre-assessment activity and used rubrics from the NPDL framework to determine where individuals and the class in general, were on the continuum as shown below. The rubrics had two further categories (accelerating and proficient) not shown here.

Dimension	Limited evidence	Emerging	Developing
Communicating in different ways	I need help to communicate what I found and learned in my task. I have trouble communicating my learning in a clear and substantive way.	I am beginning to put together different pieces of my thinking in one clear message. I am beginning to express my thinking and learning in different ways, such as through images, and other visuals, music, and spoken words, for example in film or digital presentations.	I am beginning to integrate multiple issues and perspectives into my message. I regularly use several modes of communication to get my message across in the best way.

In the pre-assessment activity, teachers highlighted to the children the problem of litter at school, and asked the children to creatively prepare to help draw awareness and reduce the problem. Almost all of them choose to prepare a poster. Teachers identified that many students were at the 'emerging level'. The intention was to determine each child's increasing proficiency using the same rubrics at the end of the unit.

Teachers then used progressions from the rubric and worked with the students to design authentic learning tasks related to a real challenge. During the implementation phase, children also used digital technologies to deepen their learning. Finally, teachers and the students used a variety of evidence to see the level of achievement in relation to the learning progressions. They also determined some teaching improvements they could make in the future.

One recent inquiry focused on developing the Six Cs through a technology inquiry. The Year 5 and 6 children developed learning resources for Year 2 children. They had to find out what the Year 2 children were interested in and then design a learning tool to support their specific learning need.

During the **assessment activity**, all Year 5 and 6 children went to the hall. They saw a large circle with snake lollies in the middle. Together they had to design something to collect the snakes and bring them out of the circle. Teachers were able to observe such things as children's perseverance, ability to adapt, problem solving and leadership skills. Students then used rubrics to complete a peer assessment about their buddy's communication and technology skills.

During the **design phase** the Year 5 and 6 children worked in pairs and interviewed the Year 2 children and people from their families to find out more about the children's interests and strengths. They recorded their interviews on iPads and sketched their emerging designs.

The Year 5 and 6 children regularly used online journals as they modified their designs to respond to feedback from the Year 2 children, their buddy and their teacher. They became aware of the needs of others through the constant opportunities to seek and respond to feedback. Later the children were able to describe the process and what they had learned.

> It was quite hard when they were trying to decide on ideas because they told us what they like, but they didn't tell us what to improve on, so we didn't know if we should keep it that way or if we should make changes.
>
> I think we have improved a lot and we have been talking to people we haven't seen much. We are communicating with them and they don't really know how to explain it.
>
> We learned how to think in a different way, if we came up with our first idea, it wasn't always our best idea so we had to keep coming up with more.
>
> It was fun doing it this way, we got to experience more things, new things, new words – that really long word – metacognition – ooowh, I never knew what it meant before.
>
> **Year 5 and 6 children**

Including children's perspectives in inquiry unit planning

One aspect of planning teachers were developing involved including children in this phase of the inquiry unit. Year 5 and 6 children focused on communication, which is one of the six underlying concepts of the NPDL framework. Teachers met with a focus group established to hear children's ideas as part of their planning for the topic. When teachers shared their initial ideas, the children suggested an entirely different direction - that they focus on communication about problems and issues experienced at school and suggested some likely issues. As part of the unit plan teachers then integrated the students' ideas into the communication inquiry unit that explored parts of visual arts, drama, dance, English and social studies curricula.

When we met with the focus group of children involved in the planning, they explained their involvement and perspectives:

> The teachers shared a little slideshow of their ideas. We talked about their ideas and decided to think about communication to solve problems at school. We suggested one or two types of problems.
>
> It is better doing it this way, as the teachers now know more about what the kids are interested in.
>
> We were also told that we could possibly end up with something that would become our school's production next term. Some of us are now working on skits about communication to solve a problem. We have also been improving our persuasive writing.
>
> **Year 5 children**

When ERO spoke with a group of children, they were about halfway through the inquiry topic. They told us many different ways they were now communicating messages and were working on a variety of problems they wanted to address, such as bullying and looking after sports gear used at lunchtime. When we asked if they could tell us more about deep learning, they told us their teachers expected them to think of more than one idea because your first idea is not always your best idea. They were expected to aim for 10 ideas. Some children showed us all 10 of their ideas.

One boy focused on communicating the harm done when you steal something, as his skateboard was stolen last year.

1. NCIS (crime theme)
2. News hub ✔
3. Funny moments
4. Scripts
5. Music video ✔
6. Motorway patrol
7. Rap
8. Chorus
9. Myth busters
10. Pop music ✔

He had selected three to investigate further.

School leaders skilfully used a variety of resources to capture all aspects of *The New Zealand Curriculum* in the inquiry topics that were part of the school's curriculum. Their school values and aspects of NPDL matched the Values and Key Competencies. The Principles were included through the work with the MAC cluster, the board, whānau, the place based curriculum and the NPDL. Teachers integrated the relevant learning areas and achievement objectives across their inquiry topics. Teachers also worked collaboratively to learn or develop the knowledge and pedagogies needed to fully engage students. They were also clear about what skills children were developing and how well they were progressing.

TEACHING STRATEGY

02

Using a spiral curriculum to build on children's prior knowledge

The ERO 2011 report *Directions for Learning: The New Zealand Curriculum Principles and Teaching as Inquiry* identified that the three least evident principles from *The New Zealand Curriculum* were:

Treaty of Waitangi – the curriculum acknowledges the principles of the Treaty of Waitangi and the bicultural foundations of Aotearoa New Zealand. All students have the opportunity to acquire knowledge of te reo me ona tikanga.

Cultural Diversity – the curriculum reflects New Zealand's cultural diversity and values the histories and traditions of all its people.

Coherence – the curriculum offers all students a broad education that makes links within and across learning areas, provides for coherent transitions and opens up pathways to future learning.

The curriculum at **Papatoetoe North School** was carefully designed to make sure it included all aspects of *The New Zealand Curriculum* and was structured so all students had maximum opportunity to learn and achieve success. Children were able to build on their prior knowledge and celebrate some of their culture practices through rich learning experiences across all the learning areas, key competencies and principles.

This narrative explains how the leaders, teachers and parents kept children engaged and learning through a responsive curriculum that incorporated connections to students' lives and built on their prior understandings and out-of-school experiences.

Papatoetoe North School has well over 800 students with the vast majority identified as Māori, Pacific or Asian (mostly Indian). Three hundred children were funded as ESOL (English as a second or other language) students. Leaders and teachers collaboratively developed a coherent curriculum that gave all children sufficient opportunities to learn the processes and skills from across *The New Zealand Curriculum*. The school's curriculum was specifically designed to build on children's cultural and prior knowledge.

Culturally responsive curriculum

Knowing the learner was integral to planning. During planning, the 'Knowing the Learner' team worked to make sure the perspectives of the children's different cultures were understood and kept in mind. This team included teachers from the different cultural backgrounds. They shared personal experiences, internet links and YouTube clips that explained the kinds of cultural competencies the children and their whānau would bring to the learning. The team also led hui, fono and meetings with parents and whānau where they discussed what the term's topic or theme meant to them. Some topics such as wellbeing and sustainability also clearly linked to the children's cultures.

Teachers were expected to consider children's cultural competencies in all aspects of their curriculum. Sets of cultural competencies for teachers were outlined for Māori, Pacific and Indian children and were use as part of teacher appraisal. Teachers were expected to show evidence of how they were responding to each of the competencies. An example of the format of the competencies (including one competency the school has identified for Indian children) is shown here.

Indian Cultural Competencies	What does it look like	Evidence
Support Indian Learners' Achievement	Develop rich tasks around the Indian perspectives, their family and their heritage. Have high expectations for Indian learners. Ensure Indian learners have special needs support when needed. Build Indian learners' confidence so they are not fearful to do/say the wrong thing in class.	

Find out more about how teachers and leaders work with parents to understand the children's culture and develop their prior knowledge in the **parent partnership report**.

Using children's prior knowledge

Leaders were influenced by Mazano and Hadaway's *Building Background Knowledge for Academic Achievement* which shows that what students already know about something is a strong indicator of how well they will make sense of new, related material. Mazano and Hadaway suggest we acquire background knowledge through the interaction of two factors:

1. our ability to process and store information
2. the number and frequency of our academically oriented experiences.

Leaders and teachers developed a spiral curriculum that repeated topics every two years so children could build on their earlier learning and subsequent experiences. The theory that children need deep knowledge to ask rich questions and use higher level skills guided teaching practice.

Teachers planned and implemented broad inquiry topics and concepts each term to provide wide ranging opportunities for learning through topics such as innovation, wellbeing, sustainability, exploration and creativity. Although the topics were repeated every two years, the concepts, skills and strategies children learnt increased in complexity as they moved through the year levels. The topics were broad enough to be able to respond to the strengths, interests and needs of the current children. A Year 6 child summarised his perspective of the curriculum when ERO asked what it was like to repeat the same topic.

> When we were in Years 1 and 2 we sort of learnt about things that we could talk about and what we were interested in then. In Years 3 and 4 we had to think creatively and try to innovate new ideas. Now, when we are in Year 5 or 6, we do a lot more about technical processes and science and cycles and things like that.
>
> **Year 6 child**

The spiral curriculum

Leaders made sure children had new opportunities to build on their previous learning by developing detailed curriculum guidelines that described the skills, progressions and strategies across Levels 1 to 3 of *The New Zealand Curriculum*. These linked the children's developing skills to the learning areas.

The comprehensive skill progressions they created showed teachers what children should experience through the year levels and gave children maximum opportunities to achieve success while avoiding repetition. Leaders expected teachers to integrate the skills across and between the learning areas. The concept teachers focused on each term formed the basis for much of the reading and writing children would undertake. The high level of integration across the learning areas intentionally maximised children's learning time, their depth of learning and the transfer of learning across the curriculum.

An overarching skills matrix supported teachers to become familiar with what students should experience through the years. The skills were determined through making the links between the learning areas of *The New Zealand Curriculum* and the Key Competencies visible. The skills were described as:

> personal voice
> prior knowledge
> questioning
> problem solving and solution seeking
> decision making
> presenting.

An overarching skills matrix supported teachers to become familiar with what students should experience through the years:

LEARNING AS	**Curriculum Level 1** Learning the codes in reading, writing and number			**Curriculum Level 2** Thinking logically, comprehending	**Curriculum Level 3** Applying skills
PROCESS	Develop inquiring minds/skills			Deliberately teaching the inquiry process	Developing independence in inquiry
KEY SKILLS	Know – Personal voice	What – Questioning	How – Making & creating meaning	Learning – Problem solving and through presenting	Apply new questions
	Enduring Understandings Essential Questions Knowing the learner Prior knowledge Academic vocab	Questioning Academic vocab	Social Studies matrix Tech matrix Science matrix Comp matrix Viewing matrix Maths matrix	Extrapolating the enduring understanding Problem solving Decision making	Presenting Writing Genre Presenting Matrix Spelling Handwriting Hauora

Leaders and teachers worked with an external facilitator to develop a curriculum Level 1 to Level 3 continuum for each of the key skills above (e.g. *know, what, how, learn* and *apply*). Each continuum described what the child would do at that level with activities such as:

> discuss the effectiveness of my presentation in conveying my message to my audience
> design and make a pattern that involves translation, rotation or reflection
> ask open and curious questions using what we know about similarities and differences.

Each continuum included a summary of the main focus to consider when planning each topic (as shown here in an example from the continuum "*What* – learning through questioning – creating and making meaning"). Key skills teachers and their students were to focus on were known and applied.

What do we want to know? Focus – Is my question a high quality one to investigate?		
Children	Teachers	Environment
> generate relevant questions based on prior knowledge and ideas > edit their own questions using co-constructed questions, frameworks and strategies > support and guide others to ask rich and relevant questions using the models > use a variety of resources to support the answers to their question/s > record what they have learnt as they refine their question.	Am I providing: > the rich experiences and the structure that will enable the children to refine their question? > a range of immersion/ front loading activities that can help the children to form the different types of questions they have? > models of reflective questions?	> prompt- and model rich environments > a range of resources and global learning connections for children to use > learning centres

Leaders and teachers designed the continua to respond to the specific strengths and needs of the children at the school. They recognised that some new skills and processes would be difficult for some of their children to master in one step. As a result, many of the continua had clearly outlined two different stages for each curriculum level as shown in the example below from the personal voice continuum for Level 3.

Personal Voice Level 3 – Independent use of the Process		
	Stage 1	Stage 2
> Responsible information user > Self directed learner > Thinking > Self Management	Value the power of my personal voice and recognise the impact of my voice on others	Value the power of my personal and others' personal voice and recognise the impact these have in a range of situations
Literacy Integration > Oral Language > Reading Written Language > Information skills e.g. skimming, scanning > Online resources > Academic vocabulary	Contribute the relevant ideas in a way that will enrich my own and others learning Seek feedback from others in a way that I have used my personal voice	Reflect on how my personal voice has impacted on my own and others' learning Act upon feedback to modify the ways in which I use my personal voice to communicate my ideas to others Give feedback to others on how they can modify their voice to communicate to others

Leaders wanted to make sure children engaged in cognitively challenging and purposeful learning opportunities in each of the learning areas of *The New Zealand Curriculum*. They introduced a matrix outlining the skills teachers were to develop through each of the learning areas. In some learning areas or strands teachers were guided by externally developed matrices such as the **asTTle writing rubrics** or the **English Language Learning Progressions (ELLP)**. However, in other areas such as visual language they developed their own matrix. Their mathematics matrix outlined geometry, measurement and statistics objectives across the three levels to integrate into the termly topics.

An example from the Level 3 visual language is shown below.

Visual language	
Static Images Books, photographs, signs, posters, packaging, symbols, cartoons, advertising, logos	> Critically analyse the mood of static images and suggest other possibilities > Critically analyse the messages of static images (e.g. advertising, packaging) > Evaluate the effectiveness of media used in static images
Graphic Representation Charts, diagrams, graphs, graphic organiser, flow charts, maps, concepts, timelines	> Think critically about and discuss the effects of the way information is presented > Compare and contrast the effectiveness of two or more graphic representations
Displays Murals, wall stories, projects, newspapers	> Analyse and explain layout decisions in displays (e.g. newspapers, magazines) > Through picture disclosure, children will draw conclusions and formulate ideas
Moving images Videos, TV, Films, YouTube	> Summarise and evaluate information presented in moving images > Critically analyse moving images

Planning for each topic

Senior leaders decided on the key question and contexts for each term. Leaders and teachers planned the term's work the previous term to help children build their prior knowledge and academic vocabulary with their families in the holidays before the unit began.

The three teaching syndicates used the matrices and continua to collaboratively plan termly units of work that gave children opportunities to engage with the full curriculum and focus on the skills they needed most to succeed. Syndicates were released each term for teachers to discuss their unit planning and intentions with the inquiry learning consultant the school employed. Teachers recognised the value of collaborative planning when introducing more complex activities and skills, so when children revisited a topic, they were not repeating things they learned earlier. The matrices and continua reduced the risk of children working on skills and processes they had already engaged with and mastered when learning about the topic previously.

Following is an example of part of the overview planning for the one term's unit '*Creativity*', for Years 3 and 4 children.

Enduring Understanding
Creativity enriches communities and inspires people to think innovatively

Essential Question
What is creativity? Why does creativity affect communities? How are people creative?

Academic Vocab: creativity, communities, innovation, innovatively, issue, physical phenomena

	1	2	3	4	5	6	7	8	9/10
INQUIRIES	Intro to vocab & enduring understanding	Physical Phenomena Rotations Electricity Magnetism Light & colour Forces & motion Sound		Teacher led inquiry How can a toy, teddy go faster down the slide – friction Model following a scientific process		Child/group mini inquiries Encourage children to think creatively to explore a problem in their world and to follow a scientific process			Finish off

Learning intentions for Social Science Level 2 and Science (Physical world are listed)

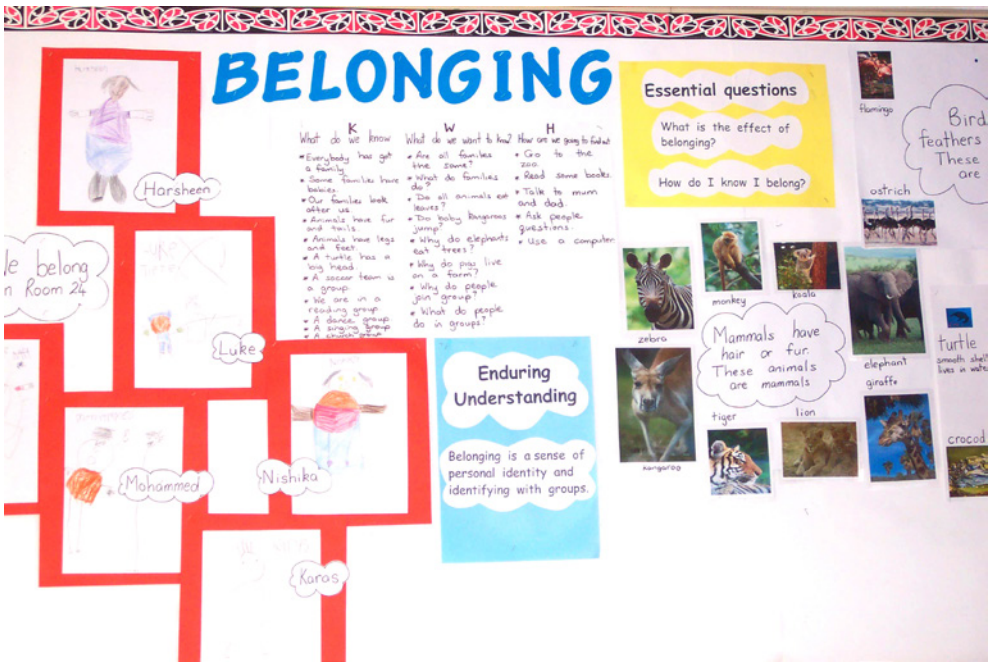
Possible Success criteria for Science are fully explained

PROBLEM SOLVING	Identify a problem and suggest possible solutions within a variety of contexts/situations Evaluate the effectiveness of plan, resources and instructions Evaluate the solutions of others within a variety of contexts
DECISION MAKING	Set and monitor personal learning goals Analyse and consider a variety of approaches Manage timeframes and arrange activities
PRESENTING	Select, form and express ideas on a range of topics Forms and expresses ideas and information with reasonable clarity, often drawing on personal experience and knowledge Develops and conveys personal voice where appropriate Seeks feedback and makes changes to texts to improve clarity and meaning

WRITING	Poetry	Weeks 2-4: Explanation (Links to physical phenomena)	Poetry	Narrative	

READING	Building vocabulary knowledge (linked to super spelling task) Summarising and synthesising Predicting and activating prior knowledge
STRAND MATHS	After Year 3 geometry Predict and communicate the results of translations, reflections and rotations on plane shapes Year 3; Represent reflections, translations, and rotations by creating and describing patterns

Here is an example of the children's involvement in setting the direction during the topic '*Belonging*'. Some children changed the topic focus to animals belonging to different groups. Teachers were able to weave the skills they wanted children to develop into any of the contexts that matched children's interests.



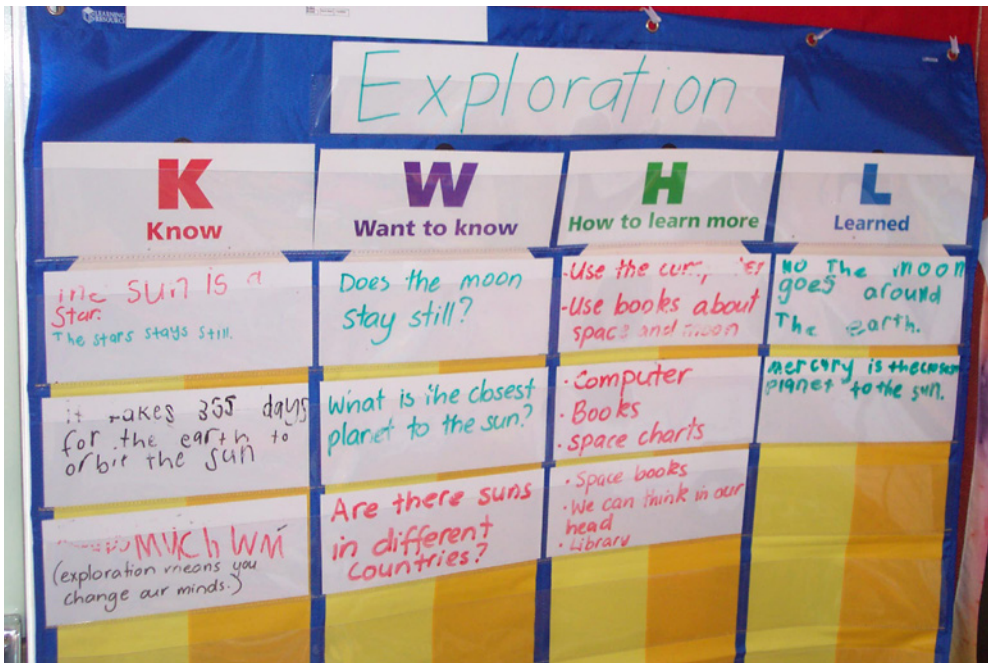
Teachers in each syndicate collaboratively planned purposeful activities that matched to the children's interests and drew on real life contexts, issues and experiences. The programme for the topic '*Exploration*' highlighted the considerable difference in the learning activities children engaged in when ERO compared Year 1 and 2 children's learning with that for Year 5 and 6 children.

The **Year 1 and 2** planning overview and one teacher's reflections for weeks 3-6 during the '*Discovery*' topic. Objectives from the English, science and social studies curriculum are included here.

Planning overview	Teacher's reflections
Week 3 > I went walking/Walking through the jungle/ We are going on a bear hunt – Using sentence starters like I went walking and I saw. I went walking through the native garden and I saw. Think, pair, share > Explore school grounds – observing – Looking above, in front and below them. > Be an explorer – demonstrating the same qualities an explorer uses when exploring e.g observant, perseverance > Use a question frame to generate and ask questions related to an investigation (S) > Alphabet key/Definition and title – Identify different types of explorers.	**Week 3** > Used alphabet key to make a list of different types of explorers > Focused on the word observe – explained that it meant to look closely. Completed observation drawings on things that they found when walking in the native garden > Oral language – definition, title and picture match of different types of explorers.
Week 4 > Habitats – Ocean and Desert – compare/ observing > Definition and word matching – home learning > Identify scientific skills that people use when exploring their world (S) Discuss what skills a scientist uses and compare it to explorers and what skills they use (observe, questioning, answering questions) > What is a habitat? Name different types of habitats.	**Week 4** > Covered going on a bear hunt and using descriptive words to describe the types of places the family explored. > Focused on sequencing and most of children found this hard. Children could match the correct word and picture but when asked to place it into order most struggled. > Completed a KWHL chart on Habitats. Started from their prior knowledge and used the donut circle to ask questions to partner.
Week 5 > Sir Edmund Hillary – skills flow chart – audit memory skills > Labelling tools a mountaineer uses > Facts – Sheena Cameron (note taking) > Identify scientific skills that people use when exploring their world (S) > Listen to a speaker and ask a question to investigate the challenges people have faced in the past, when exploring. (SS)	**Week 5** > First time we have used a skills flow chart and it helped children, especially the red and green group to write 3 or more sentences on a specific topic. Briefly talked about what skills Hillary used when exploring, but focused more on what special equipment he needed when exploring. > Presented our bear hunt at assembly and introduced the song "don't give up" as well.

S = Science SS = Social Studies

Teachers across the school used **KWHL charts** (mentioned previously) to get children to understand how they could build on their prior learning. Here is a partially completed KWHL chart being completed by a group of children.



At the same time, the Years 5 and 6 children were engaging in a teacher led inquiry before beginning their own independent or group inquiry. The overview for the three weeks of the child led inquiry also integrated parts of the English, science and social studies curriculum along with many other key skills and processes as shown on the next page.

<table>
<tr><th>Week 5</th><th>Week 6</th><th>Week 7</th></tr>
<tr><td colspan="3">Learning Intentions
> Analyse how the quality of people affect the outcomes of an exploration – Social studies
> Investigate the impact of astronomical systems on Earths' patterns – Science
> Apply concepts about what they have researched about space and speculate on future advancements in exploration
> Form opinions and ideas from information that is in the text and justify these – English
> Think critically to state an opinion about the effectiveness of the feature of a text
> Justify your opinion with supporting evidence from the text
> Evaluate prior knowledge for accuracy and select appropriately</td></tr>
<tr><td colspan="3">Success Criteria
> Report and share the effect of astronomical systems on people and places
> Explain how astronomical systems may affect people
> Predict future advancements in exploration
> Support predictions with scientific reasoning
> Explain, with justification, how the scientific skills people use when exploring have changed over time
> Identify components of our solar system
> Illustrate or demonstrate the relationship between astronomical systems
> Follow an appropriate process to carry out an investigation
> Report and share findings of the effects of astrological systems</td></tr>
<tr><td>Focus: Mini inquiry
Planet Study</td><td>Focus: Beyond the Planets – Student led inquiry looking at space exploration</td><td>Focus: Modern Day Explorers – Looking at modern explorations, drawing comparisons to earlier explorers and making predictions about future advancements</td></tr>
<tr><td colspan="3">Skills
> Speculate – make a judgement with supporting details
> Predict – infer (literacy link)
> Investigate – question, explain, consider, evaluate
> Justify – using reasons or evidence to support my claims
> Illustrate – diagram, note taking, labelling
> Explain – persuade, form an opinion using a main idea sentence with reasons
> Apply my understanding consider audience, purpose and answering your question
> Question – finding evidence (research) that answers my question</td></tr>
</table>

Week 5	Week 6	Week 7
> Using Google Classroom and LiveBinders, children will find relevant or appropriate information that meets their individual questions. > Children will have "check in" meetings booked with the teacher around developing their questions, and to identify the progress and process they have made. L 2 Students will work with the teacher on exploring a mini planet inquiry –"Why can't this planet support human life?" > This will mirror what we did regarding the Earth inquiry, which will support children throughout their investigation. > They will be given resources, which the teacher will work on with them to unpack.	This week children will be given the opportunity to conduct their own mini inquiry, with a space focus, beyond planets, this could focus on the moons, or movement and exploration in space. Questions to guide this: > How does the atmosphere of my planet affect the survival of life? > How do the layers of my planet affect the survival of life? > Can life survive on my planet?	With a modern day explorers focus this can look at modern exploration in space or on Earth. They will follow the same inquiry process as the previous two weeks. Student led research extended throughout the Week 8 children used their knowledge of how life survived on Earth – Students had looked at how Earth supports human life: > Atmosphere has oxygen to support life. > Layers of the Earth support life solid and absorbs heat. > Temperature and distance from Earth. Using this to guide their own learning/research.

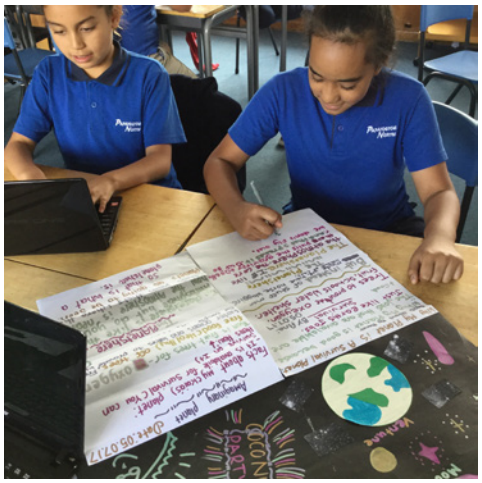
Children were excited about what they were learning. Years 5 and 6 children enthusiastically shared many highlights from their recent work with us and knew their teacher had high expectations for them. Some of the inquiries children focused on included the following:

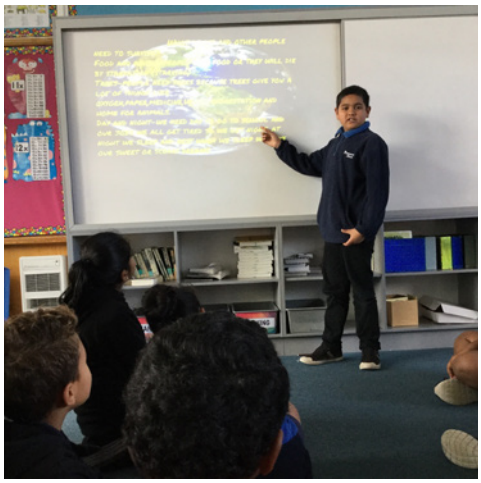
> What are the conditions for life on Earth and why do we have them?
> What reasons are there to man an exploration of Mars?
> Is sustaining life on Mars possible?
> What do we know we need for sustaining life?
> What do we need to consider about Mars if we were to live there?
> How can we overcome the differences humans would face to colonise Mars?
> What technologies are there that enable space travel for extended periods of time?
> What future technologies need to be developed to enable extended space travel and colonisation?
> What social and physical considerations do we need to have to live on Mars?
> Why do we need to consider Mars as a future home?

After their investigations they determined a future on Mars was possible but they needed to go beyond what they currently knew.

The considerable work the school had done to develop and outline their local curriculum in detail allowed children to both build on what they had learnt previously and to experience engaging activities that focused on all the skills they would need for their future education.

Leaders and teachers carefully designed planning formats and guidelines that resulted in a highly coherent curriculum. Leaders promoted a culture characterised by high expectations for student achievement, shared aspirations to improve teaching and a desire to work collaboratively.





TEACHING STRATEGY

03

Motivating and engaging children through a rich local curriculum

ERO's *School Evaluation Indicators* state that *The New Zealand Curriculum* is enabling and future focused and is intended to promote self efficacy. This requires a learner centred approach, where teachers choose contexts and design learning opportunities in discussion with their students and support them to work collaboratively on challenges and problems set in real world contexts. Responsive curriculum incorporates connections to students' lives, prior understandings and out of school experiences. It draws on and adds to parent, whānau and community funds of knowledge. Student identities, languages and cultures are represented in materials used in the enacted curriculum. Cultural and linguistic diversity are viewed as strengths to be nurtured.

Each term at **Sylvia Park School** teachers implemented an inquiry designed to make their children curious about what they needed to learn and what was happening in their lives, their community and the world. The curriculum was organised to focus on contexts relevant to the time and to make sure children had experiences across *The New Zealand Curriculum* that linked to and enriched their lives.

This narrative shares the approaches and strategies leaders and teachers used during one term's inquiries. To find out more about some of the school's other inquiries go to **Teaching approaches and strategies that work.**

The school's visions outlined some of the key things the board and leaders would like children to achieve before they left the school at the end of Year 8. One vision was to have children demonstrate initiatives to contribute positively within a changing society. The school's inquiry topics helped children towards achieving this vision. The inquiries also kept children engaged and motivated to learn. When ERO met with a group of parents, they told us they believed the reason children continued to improve their achievement levels while at the school was likely to be because of the interesting inquiry topics.

Each term, the whole school was involved in an inquiry designed to make children curious about what they needed to learn and what was happening in their lives, their community and the world. The curriculum was organised to focus on contexts relevant to the time and to make sure children had experiences across *The New Zealand Curriculum* that linked to, and enriched, their lives.

The inquiries were often planned to incorporate major events happening in their community, New Zealand, or worldwide such as elections, referendums, Olympics or natural disasters. Teachers planned other inquiries to make sure children had opportunities to explore the arts, science, environmental and social issues, and to meet achievement objectives across the breadth of *The New Zealand Curriculum*.

ANZAC Day

The inquiry in this example was started as part of the centenary of World War One. This topic fitted well with the centenary and allowed children to look at something major in New Zealand's history. Many children had requested an inquiry about our history when they had completed reflections and suggestions for future inquiries as part of their previous end of inquiry reflections.

The starting points for the inquiry were a statement centred on a curriculum area and a question that linked to the children's lives.

Inquiry statement: Learning from our past to lead the future – E puta ki Taiaatea!

Focus statement: Keep Calm and Carry On

Focus Question: How can we deal with conflict

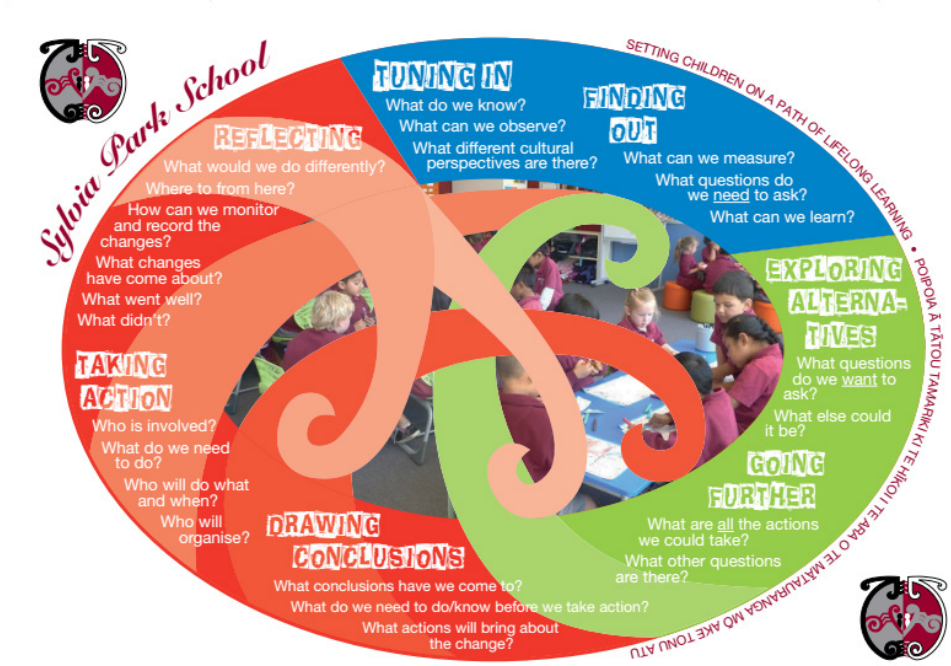
Planning the inquiry

An inquiry team and a literacy team comprising teachers and learners, undertook planning and monitoring. Joint planning by the two teams made sure consistent practices built on what had gone before and that children experienced learning opportunities across *The New Zealand Curriculum*. The teachers in each whānau team (teaching team or syndicate) would take the curriculum overview and devise innovative and creative activities to support the children to pursue the inquiry into the different learning areas.

Leaders asked teachers to push the boundaries by giving children opportunities they might not have considered. Children's interests were incorporated into what they were learning by teachers. Teachers carefully considered what had worked well before, what their children needed more practice with and what they were interested in when planning the inquiry. They also had to make sure the topic was broad enough to allow children to make choices about different aspects that interested them.

Teachers also sought to increase children's knowledge of events from their own family's history. As many of the children in the school were either Māori or Pacific, the inquiry related to World War One included a focus on the Māori battalion and events in the Pacific Islands. Children's history from their culture was highly valued.

The School's Inquiry Process



The six phases of their inquiry cycle are shown above. Often the teachers did some type of presentation or whole school activity on the first day of the term to get the children interested and excited about the topic. The amount of time taken in each of the phases differed, depending on the children's prior knowledge. In this inquiry, time was needed to explore a wide variety of school journal stories, short film clips and historic news articles. In this particular inquiry, the Years 5 and 6 Te Manawa whānau team added further questions in the school's inquiry process as shown below.

TUNING IN THE HEART AND MIND > What can we learn? > How did it get to be like this? > How can we influence things?	**DRAWING CONCLUSION**
FINDING OUT > Who started it? – from different perspectives > What would we change if we could?	**TAKING ACTION** > Who else do we need to involve? > Which actions will bring about the changes that we want? > Which designs will work the best?
EXPLORING ALTERNATIVES > What have others done?	**REFLECTING** > How will we celebrate our achievements?
GOING FURTHER > What are our priorities for change? > How will we decide?	

Involving the children in planning

The children were involved in the planning and contributed their ideas about what they would like to learn. Children were encouraged to wonder about the inquiry statement: Learning from our past to lead the future – E puta ki Taiaatea!

These ideas were sorted into groups of questions that children later worked in inquiry groups to research further. Children's questions were sought during the *Tuning in* phase to ensure prior knowledge. Some of the questions children in one class wondered about are shown here:

I wonder:

- how many New Zealand men died at Gallipoli?
- who the General was who sent the soldiers to war?
- how long a trench is?
- how often the troops had to move places?
- how long it took their letters to get here?
- who sent the 'return to sender' letters?
- why girls didn't get conscripted?
- why they left their dead behind (Gallipoli)?
- why they didn't retreat in the first place (Gallipoli)?
- how many Turkish people died?
- why they had to fight in Turkey in the first place?
- who started the war and involved New Zealand?
- why they started a war instead of creating a treaty?
- why New Zealanders were ordered to go to war?
- if any people refused?
- why that man (the politician from Waikato) wanted Māori to go to war?
- why the Māori men thought that they should fight for the king of England?
- how many Māori men went to war and how many died?
- who thought up the conscription lottery?
- what all of their reasons for refusing to go were?
- why they didn't let men with bad teeth go?
- where Influenza came from?

Children were also continuously involved in decision making relating to the direction the inquiry was taking, and progress towards answering the inquiry question. Additionally they co-constructed criteria for the key competency, Thinking – Relating to Others that was then displayed in the classroom.

An iterative team plan, collaboratively developed by all teachers in the team, gave detailed guidance about the journals, film clips, news links and other teaching resources teachers could use to motivate and engage children. Advice was also given about possible questions to make sure the inquiry continued to focus on children's ideas and interests. An example of the advice is shown here:

Questions to consider when co-constructing your class treaty:

> What kinds of rules apply to you?
> How do they help you and other people to stay safe?
> What are the consequences when rules and expectations aren't met?
> Would your school rules work well for people in the community?
> Why do you think that creating rules and consequences are/aren't a good way of having an agreement with people and avoiding conflict?
> What are some ways we can create expectation about our behaviour on a national level?

Activities were carefully planned to allow for a balance; children learning about events and then linking these events to their own lives. They also integrated objectives from across the learning areas of the curriculum. Much of the learning happened during reading and writing programmes, as well as in the timetabled inquiry times. Some of the learning activities for Years 5 and 6 children included the following:

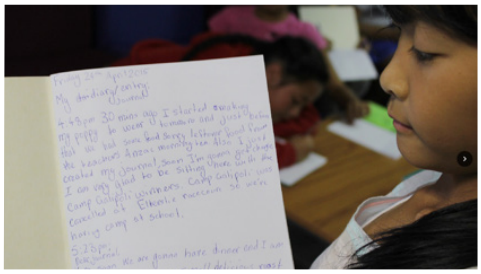
> reading and reflecting on resolutions from journal stories about some type of conflict
> investigating New Zealand involvement in seizing and maintaining peace in German Samoa
> King and Country – whānau and iwi debate the issues of going to war
> looking at the language used in posters displayed during the war to control people's behaviour
> discussing and agreeing to their own class treaty
> developing a timeline of the child's life before investigating a timeline from the triggers to the end of World War One
> looking into why we have rules and the consequences of not meeting those expectations
> inquiry groups researching sets of *I wonder* questions
> completing an art installation that involved writing to their future selves.

Making learning exciting

When ERO spoke to children about why they were so motivated by their inquiries, they told us their teachers always made their learning come to life. In this inquiry, one classroom and the staffroom was turned into Camp Gallipoli. The classroom was arranged as trenches to show the children what cramped living conditions soldiers had endured. Before the children went into the classroom and trenches they helped prepare a traditional meal they would eat later.

The children stayed overnight at their Camp Gallipoli before going to the dawn service. While in the trenches, children made diary entries and ate hard tack and ANZAC biscuits. Later they moved to the staff room and created poppies to wear at the dawn service. They also played games popular with children during the war and set up their beds. After eating dinner, they watched a film clip about soldiers arriving in Gallipoli, before finally adding new diary entries to highlight what the soldiers might have been thinking. Their teacher read them a story about Caesar the ANZAC dog before the children went to sleep. The next morning they ate breakfast and went to an Auckland dawn service followed by a choral service.

Although ERO focused on the Year 5 and 6 children's inquiries in this narrative, every team in the school took the initial inquiry plan and adapted it for the age group of the children. They all developed class treaties that fitted in well as a collaborative Term One orientation activity.



A child shares one of her diary entries

The class attending an ANZAC dawn ceremony the next morning

Children at the school's ANZAC service

Making ANZAC biscuits

One of the highlights that the Years 1 and 2 children talked about was when they made ANZAC biscuits. Year 7 and 8 children recalled many things including investigating the significance of the poppies and the different designs of the commemorative poppies from other countries. They also investigated New Zealand's more recent role in peacekeeping in the Solomon Islands.

One of the whole school events was an ANZAC day service held at the school. Teachers told ERO that although it was a simple school ceremony, the way the children acted and spoke made it a very solemn and emotional event.

Before the service, each class made a wreath to take to the occasion. Every child designed a wreath and then each class used a well established and democratic process to decide which wreath they would make before working together to make the agreed design.

This is my wreath. It is made out of string, cardboard and paper poppies. The class voted for my wreath to be made. I liked everyone making a poppy for the wreath.

Year 5 child

What the children learnt from the inquiry unit

At the end of each inquiry, children reflected on their self management skills when working in their inquiry group and they identified other successes or barriers to learning they noticed during the inquiry. Below are some of the many reflections from Year 5 and 6 children.

> This inquiry has taught me how important it is to stop and understand that the enemy is another human. Try to always choose a solution to conflict that is best for everyone – and sometimes you've got to really think outside the box.
>
> This term through team building activities and other social experiments like being cramped in a trench for an afternoon I learned that in order for the group to succeed you must follow the orders of the leader. Even if you feel jealous that the leader is not you, it is for the good of the group. I also learned to frame up my questions, research properly using key words and to present my learning in a Google presentation.
>
> I learned how solving conflict is all about communication, selflessness, building a good reputation, choosing a good path, and being respectful.
>
> In life you must take the experiences you have, learn from them, keep calm and carry on rather than using them as excuses for inappropriate behaviour.
>
> **Year 5 and 6 children**

Not only had children investigated and immersed themselves in events of World War One, but they had also explored their own role in dealing with conflict.[4]

The school's curriculum design and implementation was highly responsive to the aspirations of students and successfully drew on and responded to culture and prior knowledge.

4 To find out more about this inquiry and the other interesting learning opportunities children had, **use this link**.

TEACHING STRATEGY

04

Focusing on the school's and national curriculum priorities

The 2012 ERO report *The New Zealand Curriculum Principles: Foundations for Curriculum Decision Making* found some confusion around the different intent and role of the principles, values and key competencies of *The New Zealand Curriculum* in improving outcomes for all students. Rather than using the principles as a starting point for curriculum design, they have often been something that has been grafted on to the curriculum retrospectively, if considered at all.

Leaders and teachers at **Oratia School** carefully integrate all parts of *The New Zealand Curriculum* with their own local values and priorities in a curriculum designed to fully engage and motivate their children. They aimed to ensure no part of *The New Zealand Curriculum* was neglected, while prioritising any principle or key competency that delivered most benefit to their children. They also monitored engagement by regularly seeking children's perspectives of how the curriculum, teaching and other aspects of school life helped them to learn.

This narrative shares some of their curriculum design and implementation strategies and their monitoring of students' engagement.

Children at Oratia School experienced a curriculum integrated across the learning areas, to give them opportunities to learn and practise new skills in authentic and engaging contexts. Teachers' planning was organised in ways that help children make connections across all learning areas, principles and key competencies as outlined in *The New Zealand Curriculum*. Leaders and teachers planned, implemented, and monitored their curriculum by:

> clearly identifying their local priorities for children
> collaboratively planning and teaching relevant and highly engaging learning activities
> monitoring both student engagement and achievement.

Focusing on local priorities

Leaders stressed that all planning and review began with their strategic goals and plans. A key goal in their strategic plan was to provide a high quality education for children that inspired curious, creative and critical thinkers who achieve to their potential. Teachers emphasised the *future-focused* principle from *The New Zealand Curriculum* as a rich source of learning, relevant to students' futures. This principle was prioritised and outlined in the school's curriculum guidelines as shared below:

Future-focus issues include:

> **sustainability** – exploring the long term impact of social, cultural, scientific, technological, economic, or political practices on society and the environment
> **citizenship** – exploring what it means to be a citizen and to contribute to the development and wellbeing of society
> **enterprise** – exploring what it is to be innovative and entrepreneurial
> **globalisation** – exploring what it means to be part of a global community and to live amongst diverse cultures.

Their curriculum also emphasised the key competencies from *The New Zealand Curriculum*. Teachers had looked deeply into the opportunities each of the competencies provided children and developed key understandings, attitudes and key skills for each of the five competencies. These were outlined in the school's curriculum and were shared with students to use as part of their self and peer assessment activities.

Many unit topics included opportunities for children to inquire into areas of interest for them that related to the current topic. The inquiries emphasised process and the development of skills and dispositions to facilitate life long learning. The model required students and teachers to:

> include direct experiences
> use e-learning tools to connect with experts
> make connections between prior knowledge and new learning
> reflect on new learning through individual and group activities.

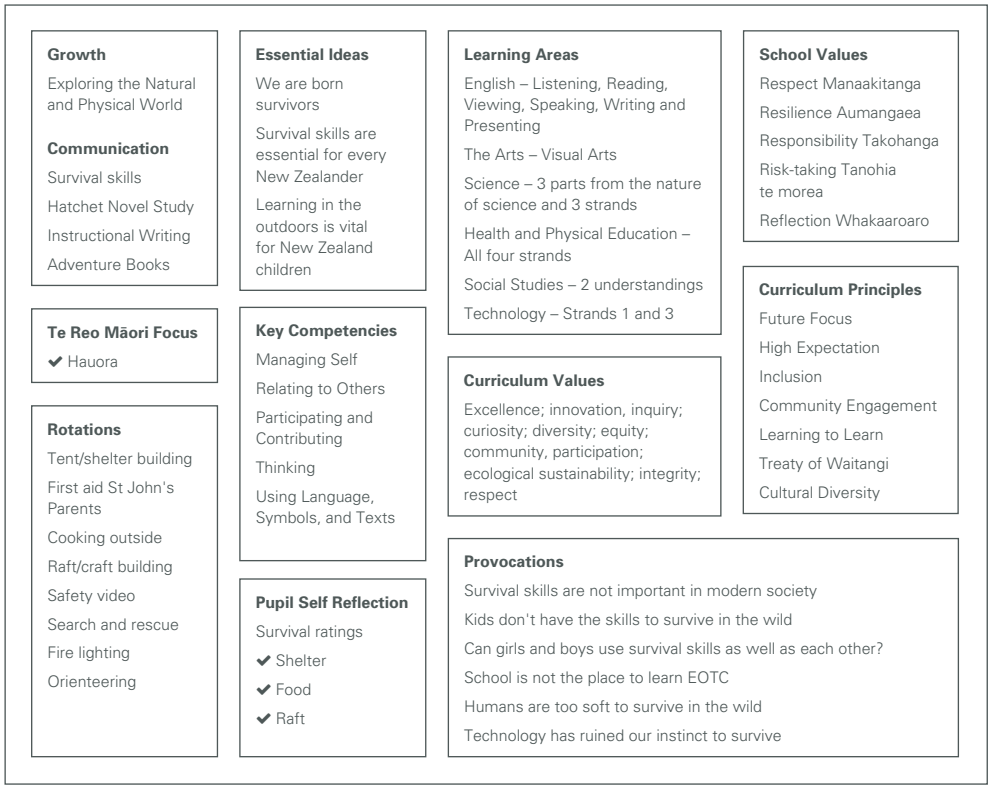
Collaborative planning for the topic

Planning for each term's topic began with a collaborative brainstorm to explore all the learning to incorporate into the topic. Teachers together considered how they could combine:

> the essential ideas to focus on
> links to a variety of learning areas from *The New Zealand Curriculum*
> the key competencies
> the principles and values from *The New Zealand Curriculum*
> their school values
> aspects from their school wide te reo Māori plan
> parts of the programme children could self assess
> areas for teachers to reflect on at conclusion of unit
> teaching points to focus on as part of their school's charter targets.

Following, we share parts of the brainstorm, planning and the implementation of a unit about *Survival* that Years 5 and 6 children told us they were enjoying during their reading, writing and afternoon programmes.

The diagram below shares the initial brainstorm undertaken by the leaders and teachers. When suggesting activities, teachers carefully considered both their local goals and the different parts of the national curriculum.



Teachers also developed the key understandings expected for students, and the teaching points or questions they would explore during the term. Although children were expected to gain new information, many of the understandings included strong links and gave priority to the key competencies. Students' initial understandings and teacher questions for the *Survival* topic are shared here:

Students will independently use their learning to:

> Apply skills in everyday situations

> Build confidence in the face of courage

Key Understandings	Teacher Questions (Teaching Points)
Students will understand: > when to step up and when to step back (in group situations, listening, reasoning, understanding, tolerance, negotiation and compromise are key to success) > in survival situations a successful outcome is dependent on the choices you make (adapting to change) > how reflecting on challenges leads to better learning (growth).	> How do we use the Oratia Inquiry Process to answer our questions about survival? > How do we evaluation our researched information? > What are basic survival skills? > What should I know before heading into an outdoor adventure or experience? > What is the process of making a video? > How do you write a script? > How do you respond in an emergency? > Why is shelter the top priority for survival and how do we create it? > What ways do we cook using limited materials? > What basic tools can I create to help me survive?

The collaborative brainstorming and planning used teachers' strengths and interests and helped manage their workload. Leaders allocated planning and teaching responsibilities for the different parts of the topic unit and agreed teaching points to individual and groups of teachers from within the team. Teachers then developed detailed plans for each of the rotation activities and reading and writing programmes. The additional planning clearly emphasised how the activities focused on the agreed key understandings. Highly interesting and motivating activities were included to motivate children to practice the key understandings.

Engaging Activities

During the *Survival* topic, children were engaged in practical rotation activities during the first few weeks of the term. The activities were designed to help them understand and experience the breadth of survival skills and knowledge needed before they began their group or individual inquiries. The rotation activities also developed many aspects of the key competencies.

The survival topic was fully integrated into their reading and writing programme. Teaching plans identified objectives for Levels 2, 3 and 4 of the English curriculum. Below are those selected from Level 3 of the English curriculum.

Reading Level 3	Writing Level 3
I can select from and use a range of comprehension strategies which include the following: > recognise and understand how texts are constructed for a range of purposes, audiences and situations > using personal experiences and world and literacy knowledge confidently to make meaning from texts > using several pieces of information to make inferences (on information not directly in the text) > evaluating and integrating ideas and information across a few texts	> use a variety of planning activities, such as constructing flowcharts, for those writing tasks that need to be planned > generate content that is relevant to the task, supporting or elaborating their main ideas with details that has been selected with some care > use written language features (such as emotive vocabulary) and visual language features *such as headings, charts or maps to extend or clarify meaning and to engage their audience > select vocabulary that is appropriate to the topic, register and purpose > encoding spelling using a variety of strategies and experiment with more sophisticated punctuation

Integrating the topic into the reading programme

During the reading programme children read the novel Hatchet by Gary Paulsen. The response activities clearly linked to the curriculum objectives above. When reading and discussing the novel the children were able to use some of the information they gained during the rotation activities such as shelter building, fire lighting, cooking outside, first aid and orienteering. As well as reading and discussing the novel, they engaged in high interest activities that involved:

> writing predictions about what might happen next
> writing about similar incidents from their own experiences
> previewing complex vocabulary
> finding out more about the aircraft involved and how to help someone who has had a heart attack
> looking carefully into settings from the novel to identify objects and resources that could help the characters survive
> answering comprehension questions that involved connecting multiple ideas together from the story to evaluate the characters reasoning and action
> fun activities to demonstrate their ideas and understandings.

Teachers planned fun activities that allowed the children to work independently or with others to fully use the new information they had gained from the previous rotation activities, their own inquiries and the novel study. The fun activities are shown here:

Choose three or more of these fun activities to demonstrate your thoughts and understandings		
Make your own movie trailer for Hatchet, or for a survival movie to be filmed in NZ.	Draw or use photo collage to compile a survival kit. Gather items and design a container using recycled materials.	Create a Wevideo survival video. Follow the inquiry cycle shown in the link already provided for you.
Create a diorama to show a scene from Hatchet or an imagined survival themed scene in NZ.	Design and build a survival shelter. Include instructions for teaching someone else how to build one.	Design the ultimate survival tool. Explain how to use it.
Draw/sketch a scene from Hatchet, or an imagined survival themed scene in NZ.	Write a poem/rap/song or compose music to go with the story, or with a survival theme.	Design your own survival outfit. Include diagrams and labels explaining features. Make it by recycling things.
Create a 'How to Survive Guide' for kids in the bush. Include diagrams and labelled pictures.	Make musical instruments or audio device from things in the bush. Record a sound scape of it.	Teach the class a survival skill you have learnt.

The conclusion of the topic coincided with children attending their end of year camp where they had further learning opportunities.

Monitoring children's engagement

Leaders, teachers and board trustees were highly interested in how engaged children were in their learning. Each year they used and analysed the results from the New Zealand Council of Educational Research (NZCER) survey **Me and My School** (MMS). Data from 2011 onwards showed higher percentages of Year 5 and 6 children reporting positively about their time at school. Considerable improvements were seen in 27 out of the 28 questions in the survey when comparing results for Year 5 children in 2014 to those of Year 6 children in 2015. In 10 of the questions, the percentage of children indicating they agreed strongly with a positive statement or disagreed strongly with a negative statement had risen by more than 10 percent. According to the MMS Engagement scale, a student rating at 85 or more points on the scale represents a high level of engagement. In 21 of the 28 items, more than 85 percent of the students in Year 6 were classified as highly engaged.

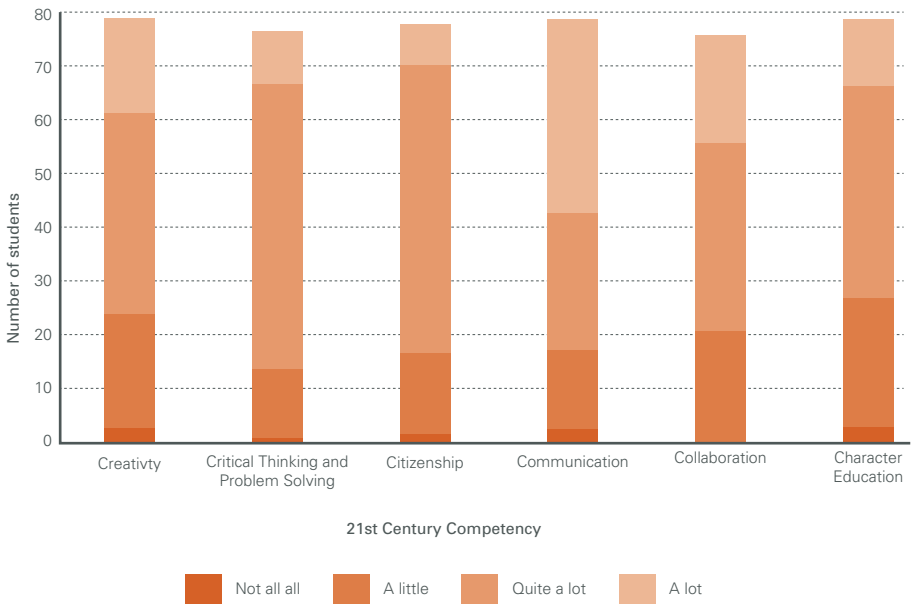
The school also collected other information to monitor students' engagement and achievement levels. They collected data and analysed it to help identify the impact of new resources and strategies introduced in the school. They analysed national standards results comparing the beginning and end of year results to help determine the impact of the introduction of **Chromebooks** in 2015. Students were surveyed and their views and scores were reported to the board. Students gave a rating using a six point scale where 0 meant not at all and 5 meant a lot.

Question	0	1	2	3	4	5
How much do you think you have improved in your school work this year?	0%	0%	2.6%	70.5%	26.9%	0%
How much of your class time is spent on meaningful learning tasks?	0%	0%	5.1%	46.2%	48.7%	0%

Comments from the students explaining the issues or celebrating the improvements were also reported to the board. Students' views were valued and responded to.

Children had opportunities to develop their strengths and engage with their passions in a curriculum that included all learning areas and other aspects of *The New Zealand Curriculum*. This is shown in the image below that school leaders developed as part of their self evaluation.

Graph of the impact Chromebooks have had on 21st Century Competencies



High levels of teacher collaboration and ongoing internal evaluation helped to improve students' engagement in a rich curriculum.

TEACHING STRATEGY

05

Building capabilities to implement an integrated curriculum

ERO 's 2012 report *Science in the New Zealand Curriculum: Years 5 to 8,* found a neglect of important aspects of the science learning area. Teachers tended to subsume science into other learning areas, with the result that students had few opportunities to experience science as a pure discipline. Schools' curriculum often lacked attention to both the science curriculum knowledge strands and the overarching nature of the science strand. Typically, students' science programmes lacked depth and coherency and the necessary focus on interactive and experiential learning that leads to deep understanding and engagement.

Leaders at **Alfriston School** deliberately led curriculum changes to make sure their integrated curriculum gave attention to all the science strands and focused on both interactive and experimental learning. Leaders began planning a whole term topic that integrated science learning with the annual school production. Leaders used questions to guide teachers through the planning, implementation and reflection stages of the topic. They provided many opportunities for teachers to work together and learn from each other.

This narrative shares the leaders' and teachers' curriculum planning, implementation and reflection strategies along with their focus on building opportunities for teachers to collaborate and learn from each other.

Leaders began making the changes towards having a more integrated curriculum in 2011. Previously, although teachers were working hard, their planning and teaching was done in isolation and curriculum learning areas were taught as discrete subjects. The sharing of successful practice wasn't common across the school.

As part of their curriculum review and development, a new goal was established that sought to strengthen and enrich all areas of the curriculum, linking them by relevance. Leaders and teachers saw that children were highly motivated to learn about the arts and English learning areas from their involved in the school's annual production. The event not only brought children, parents and teachers together, but the children enjoyed working together across age groups and enjoyed higher levels of engagement. Teachers wanted children to transfer the success they were experiencing during the production, to other curriculum areas. Leaders saw that their performing arts production could be used to bridge the gap between subject areas.

> We saw it as an opportunity to bring the whole school together for deep learning. We knew we would be able to clearly show the links of the integrated learning from the stage to the page.
>
> **Leader**

Subsequently, over recent years leaders carefully developed teachers' capabilities to work together to implement an integrated curriculum, linked to the school's annual production (usually in the third term). Every year, their curriculum focus widened and became more complex. In some years, the production was specifically written to focus on a curriculum area that would most benefit their learners. The chart on the next page outlines the production and the growing foci.

Production	Capacity building focus
2012 *Broadway Bound*	**Performing Arts** > Teachers sharing and observing others' practice. > Deliberate teaching about how children could support each other's learning. > Seeking and using student feedback.
2013 *A Night at the Gallery*	**Performing Arts, Visual Arts, Visible Learning Principles** > A group of teachers undertook the planning to integrate literacy and technology into activities children engaged with to design wearable arts. > One teacher also integrated mathematics learning into the topic.
2014 *Joseph and the Amazing Technicolour Dreamcoat*	**Performing Arts, Social Sciences and Visible Learning Principles** > Visual Arts – making canopic jars and hieroglyphic artwork > Social Science – Egyptian life and rituals > Science – Land features and land marks > Mathematics – one class investigated mathematics in Ancient Egypt > English – Listening, Speaking, reading and building new vocabulary
2015 *This is your life: Gloria Dale Scientist*	**Performing Arts, Visual Arts, Science, Technology** > Continuing with Visible Learning > Introduced Whānau Groups – Tuakana Teina learning model > Including school target focus in the unit planning (literacy and boys' achievement).
2016 *The Lion King Junior*	**Performing Arts, Visual Arts, Social Science, Science, Technology, Learning Languages** > Identity Language and culture – the understanding that all cultures can collaborate when there is a shared sense of purpose and meaning

In 2015, curriculum review identified the need for children to experience more opportunities to engage in science. The questions leaders and teachers asked during the review were as follows:

- How well does our school's science teaching complement student achievement in numeracy and literacy?
- What literacy and numeracy strategies can be applied to improve student learning in science?
- To what extent is science education responsive to students' different abilities, genders and cultures?
- **Science Pedagogy** – How well do science lessons at our school connect with the lives of students?
- **Science Pedagogy** – What data do we have to identify what students' think of their science lessons?
- **Science Pedagogy** – How is student thinking, discussion and investigation supported by classroom teaching?
- **The Strategic Place of Science** – What events, learning experiences or celebrations do we have to value science and science learning?

Science then became the major focus and was explored through the school's major production, *This is Your Life!* featuring a fictional science professor, as well as being integrated through reading, writing, mathematics, drama, dance and e-learning. The leaders initiated the planning for the integrated topic by determining the links between the production and possible science investigations. They then thoroughly examined the science curriculum strands from *The New Zealand Curriculum* and divided all the ideas from the productions into the strands from the science curriculum.

Curriculum Planning

> We [leaders] did the initial planning because we wanted to make sure the curriculum was enhanced and not compromised by the school's production. We also wanted to take the teachers through a stepped approach to developing an integrated curriculum. Finally we wanted to make sure the science unit benefitted everyone, both students and teachers.
>
> **Leader**

Teachers met together in the holidays to begin the planning for the integrated units that linked to the production. Before they met, leaders prepared key resources such as video clips and other internet links, a synopsis of the script, school wide learning themes and developed some possible learning outcomes. Leaders also modelled activities teachers could use with children. The purpose of the planning day was to share thoughts and opinions to create the very best learning experiences for the children.

Fun teacher activities undertaken to start planning the Lion King topic:

Teachers were given links to five different internet quizzes about the Lion King with these instructions – In your team design a kahoot to use with your students. At the same time, two leaders designed a kahoot for the teachers to try.

Find a quote from the Lion King that means something to you and share it with a buddy.

Lion King Characters – who's who in the zoo?

During the initial planning for each of term three's topics, teachers carefully considered a series of questions designed to elicit a shared understanding of what they wanted the children to learn and how they would go about facilitating that. The questions differed depending on the key curriculum area of focus. Below are the questions considered for the planning of the 2015 science/arts integrated topic.

> What are the main scientific outcomes you want for your students?
> Do you need to add to your own scientific knowledge? What is that knowledge?
> What experiments will your students undertake and how will they be recorded?
> What artwork will be integrated/displayed?
> How will the physical appearance of your classroom promote science learning?
> What format will the open afternoons for parents take for your class?
> What format will the open afternoons take for your whānau?
> Have you addressed all the outcomes (oral language, written language, visual arts, digital, etc.) specified in the planning templates?
> How will you promote assessment capability and visible learning principles throughout this learning?
> How will you manage the differing capabilities and levels of science knowledge in your class?
> How will you cater for students who already have a developed base of science knowledge?

The questions above were subsequently used when planning any integrated topics.

Teachers and children working together

Alfriston School had always tried to maintain a sense of family where children could enjoy working together. Leaders decided to extend the concept of family/whānau by formalising opportunities for both children and teachers from across the school to work together.

In 2015, leaders introduced whānau grouping to necessitate both further collaborative planning and teaching and the sharing of practice. Classes from different year levels were purposefully grouped together to help children and teachers with different interests and levels of experience, work together. The whānau groups in 2015 also aimed to:

> allow for tuakana teina learning, in which older children helped the younger ones
> allow children to experience deep learning across the science strands
> help teachers learn about students from other year levels and build relationships with them
> build a collective responsibility for student achievement.

Although much of the work was undertaken in children's usual classrooms on 'Whānau Fridays', classes were split into cross level whānau groups, each focusing on one of the four science strands:

> physical world
> material world
> living world
> planet Earth and beyond.

Leaders also built in opportunities for teachers to learn from each other by having teachers observe others' science teaching practice while their class was at the Performing Arts Centre working on parts of the production. Not only did they see how other teachers implemented science investigations they also saw what children in other year levels were capable of.

Implementing an integrated curriculum

Teachers in each whānau group used a planning template and a set of questions to consider as part of their planning. They were asked to think carefully about and record:

> the current skills and knowledge of the children and how they could build on these
> genuine and engaging learning experiences for the children
> how they could best use e-learning and devices
> what 'success' would look like
> content and quality
> outcomes for students
> differentiated activities within the class and the whānau group
> how this topic could support the school's charter targets through literacy links and focusing on boys' achievement.

The following tables show how learning in two science strands was integrated with learning across the wider curriculum. The first gives an overview of some of the integration of learning linked to the *physical world* and the second shares some of the learning linked to *living world* objectives. All classes also used reading resources related to the topic in their instructional reading programmes.

The Physical World

Procedural writing

- Writing scientific experiments
- Writing instructions for making porridge

Oral language

- Scientific discussions
- Making predictions
- Hypothesising
- Explaining results
- Making conclusions

Numeracy

- Measurement – speed, distance, time
- Geometry – angles
- Statistics – graphing experiment results

Music

- Exploring sound waves, visible sound waves in a guitar
- Light and mirrors song performance, including dance
- Other music and dance from the production

Visual art

- Themed around 'light'
- Scientific sketching
- Marble art force and movement
- Silhouettes – using light and dark

E-learning

- Google Apps suite to showcase and share learning with peer and families
- Using **Google Sketchup** to design science lab and sets for the production

Science

- Building a rocket
- Dehydrating food
- Making volcanoes, ice cream and 'goop'
- Heat on the move – transferring heat through temperature difference

The Living World

Procedural writing

- Writing instructions for others
- Writing about an experiment

Oral language

- Scientific discussions
- Making predictions
- Hypothesising
- Explaining results
- Making conclusions
- Teaching other children

Numeracy

- Measurement, capacity, mass, number, observing plant growth, size of orchid roots, etc.
- Statistics
- Sequencing

Drama

- Acting out the photosynthesis process

Visual art

- Looking at parts of a flower
- Chlorophyll rubbing
- Pencil sketching techniques

E-learning

- Google Apps suite to showcase and share learning with peer and families.
- Locating and sharing YouTube clips on pollination etc.

Science

- Growing plants, dissecting a plant/flower, looking at plant cells magnified

Investigating

- how plants drink water using celery and food colouring
- what happens when leaves are blocked from the sun
- the role of the scientist

Teachers learnt it was important to give children sufficient related opportunities over time to revisit and consolidate learning through practice and review and to apply new skills in purposeful ways. They worked collaboratively to plan and implement a curriculum that would engage children in experiences across the learning areas and use their own and the teachers' strengths. They were skilful in developing termly topic studies that combined many learning areas while undertaking an annual major production.

Weekly reflections from the whānau activities were introduced to contribute to the improvements. These written reflections:

> provided evidence of the effectiveness of the approach to determine it should continue
> further encouraged teachers to work together across the year levels
> helped determine what specifically had worked well and what should be changed
> identified some individual aspects of children's engagement and leadership when working across different age levels.

Reflecting on Teaching Practices

All teachers in a syndicate completed weekly reflections. Their school's reflection template involved considering the four questions shown here.

How did you use Whānau Friday timetabling this week? (E.g. – as a whole whānau, rotations, individual classes)	What hands on learning happened for your kids? How engaged were your learners? How do you know?	Breakthrough moments for your students and yourselves?	What would you change if you could do the lesson again? How would you refine the learning experiences for better student outcomes?

When completing the reflections, teachers included detail about the actual activities, resources and internet links used and how successful they were. They also commented on individual and group behaviour, describing what excited them and what didn't work as well. These reflections were so detailed they would be useful for other teachers in the school when planning a similar topic or approach in the future.

Whanāu Fridays were an established and successful strategy, particularly for integrated learning. Older students said working with the younger children improved their own learning, while teachers found their role morphing from teacher of content to teacher of learning. A parent open day near the end of the term also gave children the opportunity to share what they had learnt during the term.

Other integrated topics not linked to the school's production

Teachers then planned other integrated topics using the processes established in 2015. However some terms the children work within and across the teaching teams rather than across the whole school. Teachers aimed to make sure integrated topics included authentic learning with a tangible outcome at the end of the term.

An example of a recent integrated topic not linked to the schools' annual production occurred in the second half of Term One. During each Whānau Friday the school was divided into three teams of five classes from across the year levels. The topic Education Outside the Classroom was designed to give children practical activities to learn together while also focusing on getting to know and working successfully with others.

The Whānau Friday Activities are shared below.

Week	Learning focus
5	Insect Investigation – finding insects, close observation, researching, sharing information
6	Marble Run – planning, including others ideas, constructing, meeting the agreed success criteria
7	Team building activities – five rotations with 10 minutes at each physical activity where teamwork was key in each rotation
8	Children spent 15 minutes in activities such as sketching, buddy reading, story writing board games and toasting marshmallows, working with children of different ages
9	Orienteering, looking for different markers to complete a secret
10	The senior students went on camp while the younger students shared things they had learnt with their parents/whānau

Constructing the marble run

ERO spoke with some Years 5 and 6 children who shared some of the things they enjoyed when working in their class or during Whānau Fridays:

> Lots of the little ones had really good ideas about how to hold the structure together in our marble race.
>
> The younger children seem to have more open minds when they share their ideas.
>
> When we were doing the orienteering code we helped each other find the codes. Some of us got really excited.
>
> When we did the buddy reading I didn't have to do much. I saw one of the juniors got stuck on a word and the other juniors asked her questions and collaborated to help her.
>
> In our class we started off doing a budget for our food for camp as part of our maths. But then we really went for it and started planning other trips. We had $20,000 to plan a trip to London. That included flights, accommodation, trips, rentals and food. Some of us then decided to plan a trip to London for the same length of time with unlimited funds. One boy managed to spend $2 million. In some of the budgets we had to convert the currency from euros to dollars.
>
> **Years 5 and 6 children**

Teachers also saw the benefits of working more collaboratively. They valued the opportunities they had to:

- get to know other teachers' successful strategies and activities
- use their own strengths in cooperative teaching activities
- plan activities together during staff meetings
- reflect on outcomes together to improve their own teaching.

Planning a budget for a trip to London

They also reported they subsequently worked more closely with teachers from different year groups more frequently. They had started working together during the integrated topics and Whānau Fridays, but now collaborated to share ideas, successes and concerns related to many more aspects of their teaching.

Linking the narratives to ERO's *School Evaluation Indicators*

The table below cross-references the eight narratives to the relevant indicators from ERO's **School Evaluation Indicators**. Leaders can use the table to facilitate discussion about the variety of effective practice found in the different narratives. Where leaders, teaching teams or teachers are currently focusing their attention on a particular domain, they can use the table to select narratives that feature effective practices in that domain.

Domain	School evaluation indicators	Narrative
Stewardship	The board actively represents and serves the school and education community in its stewardship role.	1, 4
Leadership for equity and excellence	Leaders collaboratively develop and pursue the school's vision, goals and targets for equity and excellence.	2, 3, 4, 5
	Leaders ensure an orderly and supportive environment that is conducive to student learning and wellbeing.	2
	Leaders ensure effective planning, coordination and evaluation of the school's curriculum and teaching	1, 2, 3, 4, 5
	Leaders promote and participate in professional learning and practice.	2
	Leaders build relational trust and effective collaboration at every level of the school.	1, 2, 3, 5
Educationally powerful connections and relationships	School and community are engaged in reciprocal learning centred relationships.	2, 3
	Communication supports and strengthens reciprocal, learning-centred relationships.	2
	Community collaboration enriches opportunities for students to become confident, connected, actively involved, lifelong learners.	2, 3

Domain	School evaluation indicators	Narrative
Responsive curriculum, effective teaching and opportunity to learn	Students learn, achieve and progress in the breadth and depth of *The New Zealand Curriculum*	1, 2, 3, 4, 5
	Students participate and learn in caring, collaborative, inclusive learning communities.	1, 2, 3, 4, 5
	Students have effective, sufficient and equitable opportunities to learn.	1, 2, 3, 4, 5
	Effective and culturally responsive pedagogy supports and promotes student learning.	1, 2, 3
	Assessment for learning develops students' assessment and learning to learn capabilities.	1
Professional capability and collective capacity	Systematic, collaborative inquiry processes and challenging professional learning opportunities align with the school vision, values, goals and targets.	2
	Organisational structures, processes and practices enable and sustain collaborative learning and decision making.	1, 2, 5
	Access to relevant expertise builds capability for ongoing improvement and innovation.	1, 2
Evaluation, inquiry and knowledge building for improvement and innovation	Coherent organisational conditions promote evaluation, inquiry and knowledge building.	1

Education Review Office
Te Tari Arotake Mātauranga

New Zealand Government