

MINISTRY OF EDUCATION  
Te Tāhuhu o te Mātauranga

# The Strands of *Te Whāriki*: Exploration

Ngā Taumata Whakahirahira ki  
*Te Whāriki*: Mana Aotūroa

13

Kei Tua o te Pae  
Assessment for Learning:  
Early Childhood Exemplars

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Authors of text and compilers of books: Margaret Carr, Wendy Lee, and Carolyn Jones, advised and assisted by Rita Walker and Bronwen Cowie  
Publication Project Manager: Jane Ferguson  
Series Editor: Margaret Cahill  
Editor: Bronwen Wall

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**Ngā Taumata Whakahirahira ki  
 Te Whāriki: Mana Aotūroa**

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## Introduction

## He kupu whakataki

Teaching children as young as kindergarten age to question relentlessly and learn from their failures is the key to producing world-class scientists ... We must stimulate the asking of questions by young people so they grow up in an environment that encourages scientific questioning ... The education system must also help young people develop resilience in the face of repeated failure ... It is so important to keep trying and trying.<sup>1</sup>

This book collects together early childhood exemplars that illustrate the assessment of learning that is valued within the curriculum strand of Exploration/Mana Aotūroa, keeping in mind that:

Exemplars are examples of assessments that make visible learning that is valued so that the learning community (children, families, whānau, teachers, and beyond) can foster ongoing and diverse learning pathways.<sup>2</sup>

Although these exemplars are viewed through an Exploration/Mana Aotūroa lens, in many cases the lens of another strand could have been used. The principle of Holistic Development or Kotahitanga set out in *Te Whāriki* is a reminder that the curriculum “strands” are a construction, and in any episode of a child’s learning, these areas are inextricably intertwined and interconnected.

## Assessment for Exploration

## Aromatawai mō te Mana Aotūroa

The exemplars in this book illustrate possible ways in which assessing, documenting, and revisiting children’s learning will contribute to educational outcomes in the curriculum strand Exploration/Mana Aotūroa.

- Assessments value spontaneous play initiated by children and comment on the learning taking place in such play, for example, making decisions, posing and solving problems, thinking creatively, and using the imagination.

The concept of “what might be” – being able to move in perception and thought away from the concrete given, or “what is”, to “what was, what could have been, what one can try for, what might happen” and ultimately, to the purest realms of fantasy – is a touchstone of that miracle of human experience, the imagination.<sup>3</sup>

- Revisiting documentation enables discussions about how learners have negotiated their way over obstacles and re-established their concentration after they have become stuck or frustrated.<sup>4</sup>
- Assessments of competence include noticing, recognising, and responding to the learner’s physical achievements.
- Continuity of the documentation records children’s perceptions of themselves as developing “explorers” and refers back to earlier documentation to encourage discussions of this. The document also includes opportunities to acknowledge that “failure”, or making a mistake, is part of learning.
- Assessments promote a culture of success, where every child:
  - can make achievements by building on their previous performance, rather than being compared with others. Such a culture is promoted by informing students about the strengths and weaknesses demonstrated in their work and by giving feedback about what their next steps might be.<sup>5</sup>
- Assessments include evidence of teachers and children changing their minds and developing more useful working theories over time.

## The four domains of Exploration

## Ngā rohe e whā o te Mana Aotūroa

*Te Whāriki* elaborates on the Exploration/Mana Aotūroa strand as follows:

Ko te whakatipuranga tēnei o te mana rangahau, me ngā mātauranga katoa e pā ana ki te aotūroa me te taiao ... Ka ako te mokopuna i tōna ōritetanga me tōna rerekētanga ki te taiao. Ka titiro whānui, ka titiro whāiti ki ngā taonga o te ao ... Kia mātau ia ki tōna aotūroa mai i te rongo ā-taringa, rongo ā-whatu, rongo ā-waha, rongo ā-ihu, rongo ā-ringa, rongo ā-kiri, ā, mai hoki i ōna whatumanawa.<sup>6</sup>

The child learns through active exploration of the environment. Children experience an environment where:

- their play is valued as meaningful learning and the importance of spontaneous play is recognised;
- they gain confidence in and control of their bodies;
- they learn strategies for active exploration, thinking, and reasoning;
- they develop working theories for making sense of the natural, social, physical, and material worlds.<sup>7</sup>

The four interwoven domains of Exploration/Mana Aotūroa are described (as goals) in the English text of *Te Whāriki*, and each domain includes indicative learning outcomes.

Each exemplar presented in this book can be allocated to one of these four domains.

### Exploration through play

Children learn through play – by improvising, randomly exploring, compromising, negotiating, and being playful.

Good scientists, like good artists, must let their minds roam playfully or they will not discover new facts, new patterns, new relationships.<sup>8</sup>

In *The Ambiguity of Play*, Brian Sutton-Smith lists some features of the “playful”, including exaggeration, playing with boundaries, playing with time, playing tricks, teasing, completing puzzles, and playing with sound. He states, “The key is that the playful is disruptive of settled expectations.”<sup>9</sup>



The exemplar “Negotiations during block work” discusses how the children learn to negotiate and compromise when exploring ideas as a team during play.

Learning through play includes: symbolic, pretend, or dramatic play; trying out a different identity or role; and exploring how to negotiate a storyline that involves others in the same story, as is shown in the exemplar “Dressing up, painting faces, and making masks”.

Assessments document favourite storylines and highlight the learner’s developing strategies for exploring working theories and identities while at play.

## Confidence with and control of the body

In early childhood, one of the most visible achievements is often a child's increasing control over their body. Children will achieve a range of milestones on the way to this control, sometimes in an idiosyncratic order. Assessments refer to earlier achievements and may highlight the motivation and curiosity associated with physical explorations, as demonstrated in the exemplar "The acrobat".



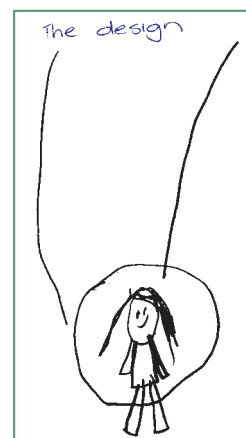
Assessments give value to sensory ways of knowing and to the developing co-ordination of mind, body, and spirit. In "Tapahia me ngā kutikuti – Cutting with scissors", looking, thinking, preparing, and practising are listed as strategies for tackling a difficult task and are documented in English and Māori. The exemplar "I'm getting better and better" emphasises the importance of self-assessment to physical achievements as well as acknowledging that Amy is developing the useful skill of perseverance.

## Strategies for active exploration, thinking, and reasoning

When children have chosen their own activities, or when they have come to "own" an activity or find personal meaning in it, they are more likely to be closely involved in the activity and to ask and follow up on their own questions or questions that interest them. Often these questions will not be expressed in words.



As part of assessment for learning, teachers will ask questions too. Black and Wiliam, however, warn about verbal questioning in schools, commenting that such questioning is often unproductive because teachers don't allow enough quiet time for children to think through their responses. This warning is appropriate for early childhood teachers as well. In group discussions, it is often the same children who answer the teacher's questions. Black and Wiliam argue that the question-answer dialogue then "becomes a ritual in which all connive and thoughtful involvement suffers".<sup>10</sup>

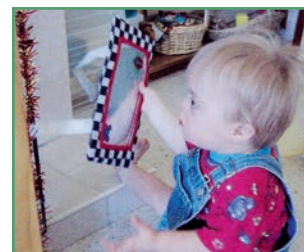


In "What's over the fence?", children use a range of strategies to explore the local environment, including listening to stories of the past and thinking about questions.

Drawing a plan and modifying the design during construction prove to be useful strategies in "Sabine designs a swing". The exemplar "A budding archaeologist" shows Logan being introduced to the research strategies used by archaeologists in the real world. "I thought about it like this" describes Luka imagining a solution and lists the other strategies he uses, including the way he teaches and assists others.

## Working theories for making sense of the natural, social, physical, and material worlds

Working theories is another name for knowledge, and the term reflects the dynamic nature of children's exploration. Jane Gilbert writes about new ways to think of knowledge and learning.<sup>11</sup> She suggests that significant knowledge is often important for what it can do, that is, for its usefulness. Working theories are exactly that: they are useful for solving problems or making sense of the world, and when they become less useful, they can be changed.





The world outside education is increasingly valuing the ability to learn – knowing *how* to learn, how to *keep* learning, how to learn with *others* – over the ability to master specific bits of knowledge. Similarly, the ability to see a number of possibilities for solving a problem is becoming more important than knowing the right answer. Schools need to be able to develop these abilities – in everyone.<sup>12</sup>

The shift in emphasis from *knowledge* to *knowing* is important. Knowing is a process, whereas knowledge is a thing. Knowing is a verb. It involves doing things and acting on things. It involves building relationships and connections.<sup>13</sup>

*Te Whāriki* is a bicultural curriculum, and mātauranga Māori has distinctive features. A Ministry of Research, Science and Technology paper commented that:

mātauranga Māori is a system which codifies knowledge according to its relatedness to environmental and life issues, rather than to what things are themselves.<sup>14</sup>

Writing about the development of a national science curriculum in Māori, Elizabeth McKinley commented that it “opened up space to contest whose knowledge and whose ways of knowing are included”.<sup>15</sup>

Sources of mātauranga Māori include kaumātua and respected elders in the community, and children learn to respect and listen to their voices. Children learn “old” knowledge, handed down from generation to generation, and “new” knowledge in the form of working theories that are also useful for specific purposes. Exemplars include a grandmother explaining the significance of the morning stars in “Te haeata – Dawn”; a group of children trying to make sense of an arson attack at the local marae in “Fire at the marae”; and children exploring a common New Zealand experience (camping) in “So, what is camping?”, investigating a reflection in the mirror in “Self in the mirror”, and using assessment portfolios to make sense of the self as a learner in “O le matamatagā tusi”.

## Exemplars in other books

## Ngā tauaromahi kei pukapuka kē

The following exemplars in other books can also be viewed from an Exploration/Mana Aotūroa perspective.

**Book 1:** Electricity in the wall; Who knows?

**Book 2:** Aminiassi sets himself a goal; George gets to where he wants to be; “Write about my moves!”; Monarch butterfly adventure; The mosaic project; Letters from the teacher, letters from the parent; Assessments in two languages; A shadow came creeping

**Book 3:** Making jam; Pihikete’s learning; Micah and his grandfather

**Book 4:** Dom rebuilds; Louie going out the door; Jak builds a wharenuī; A story about clouds; Your brain is for thinking

**Book 5:** Nanny’s story; A gift of fluffy slippers; Exploring local history; Rangiātea; Growing trees

**Book 6:** Dinosaur exploration; “I did it!”; Growing potatoes; The “mooshy gooey” bus; Skye in a box

**Book 7:** Te rakiraki; “Like something real”; Fe’ao

**Book 8:** Jayden’s towers; Double-ups

**Book 9:** John’s connecting stories; A father’s story; “I can’t tell you how amazing it is!”

These additional exemplars provide teachers who wish to reflect on the analysis and assessment of learning outcomes within the Exploration/Mana Aotūroa strand with a comprehensive collection of exemplars for discussion.

## Exemplars

## Ngā tauaromahi

### Exploration through play

### Negotiations during block work

Hannah and Charlotte and Rebecca were working on really complex block structures. Other resources were being added such as cars and wooden people. Hannah sorted through all the people and chose the girls to put on her work. Charlotte also went to put some of the people on her structure but noticed that Hannah had taken most of the girls. Hannah counted hers and told them that she had 6. Charlotte and Rebecca found they had only 2 each. Everyone counted Hannah's. Charlotte then told me that it wasn't fair that Hannah had most of the girls. Hannah told me that she wanted all the girls. They sorted out what was left and could not find any more girls in the basket. Charlotte and Rebecca then suggested a "swap". The children then swapped people until everyone was satisfied.

#### What learning was going on here?

I was really interested in the complexity of the block structures, but then I became more interested in how the children were going to sort out the minor problem of not having what they each wanted. Although they told me their problem, I did not want to sort it out for them, as I knew that they were capable of working through this situation themselves. And I was right! I think that children often do a better job of conflict resolution than we as teachers ever can, and I am reminded of this nearly every day. Charlotte and Rebecca and Hannah worked out a satisfactory resolution to their problem, one where each still had something they wanted. They had negotiated a good result. I think they are great role models to be able to do this.

Alison  
16 June

#### What's happening here?

Three children are each building their own block structure, complete with cars and wooden people. The children need to work out a satisfactory way of distributing the available girl figures between them.

#### What does this assessment tell us about the learning (using an Exploration/Mana Aotūroa lens)?

This is an example of three children negotiating and compromising as they work alongside each other. It is a common occurrence in play in an early childhood centre that there are not enough resources to go around when several children want to play at the same activity. In this case, Charlotte and Rebecca solve the problem by suggesting a "swap", and they allocate the valued figures to everyone's satisfaction.

#### How might this documented assessment contribute to Exploration/Mana Aotūroa?

This assessment highlights, and documents, the process of conflict resolution and negotiation. The teacher comments that the three children are "great role models". The documentation becomes a public document that can be referred to by teachers and children on other occasions when things are "not fair".

#### What other strands of Te Whāriki are exemplified here?

Equitable opportunities are a goal in the Contribution/Mana Tangata strand of Te Whāriki, and aspects of fairness are also a dimension of that strand. The children count the block people in order to establish whether they have been allocated evenly; this stratagem demonstrates a meaningful and purposeful use of number, which is a feature of the Communication/Mana Reo strand.



## Dressing up, painting faces, and making masks



Today a group of boys came out from the back room, all dressed up.

They asked if they could use the waterpaints and promptly got to work with the paint brushes, applying lipstick, rouge, eye shadow and nail polish.

Giving children the opportunity to explore what it might be like to be someone or something else is important in developing their understanding of themselves and how they, and others fit in to the world around them.



### The next day ...

I thought that their interest in dressing up could be used to design their own costumes and make them, using the sewing machine.



Wiremu chose to make a Batman costume.

He drew a plan of his design, chose the material he wanted to use and set about transforming himself into Batman!



He designed a cape and a mask with ears sewn on to it.

It was Wiremu's interest in dressing up that led me to reintroduce the sewing machine. It is in this way that children's interests guide the centre programme, encouraging them to extend on their ideas by utilising centre materials and equipment.

Wiremu's planning of his Batman costume design enabled him to think about how he wanted his costume to look and how he would go about making it. He cut the material to

his plan and then used the sewing machine to join the pieces together.

Wiremu, I really enjoyed working with you on this project. You had an idea, you considered how you would pursue your task by making a plan, and then you completed your undertaking using the necessary tools.

Jenelle  
March

### Painting faces and making masks

Painting faces is an activity children have long loved, but it has also raised issues surrounding children's own creative art experiences.

As a team of teachers we have long felt that adults painting children's faces in an early childhood setting, while it may promote some imaginative play, does not encourage or develop children's own art experiences.

As a result of this thinking we moved towards children painting their own, or each other's faces. However, this raised its own issues ... Can they paint faces whenever they want and with whatever they want? Yes and no! We feel children should be able to experiment with and experience this form of art when they show an interest, but they need to take into account the limitations of time and daily routines. Face painting gives children



the opportunity to practise fine motor skills, develop artistic and creative skills, encounter the unique sensory experience of having their faces painted, as well as giving them the opportunity to develop this art activity into imaginative social play with their peers.



Painting with any paints available to them throughout the centre, however, would not necessarily be appropriate due to the sensitivity of skin. Providing watercolour paint blocks and a mirror to observe their “living art” as

it develops, allows children to take control over this activity – that has long been experienced by children as being teacher directed and “done to” them.

As the children in our centre initiate and participate in this style of face painting, we are noticing a significant leap in their face painting skills and the imaginary play that is evolving from this, in children of all ages.

This interest has led us on to making and decorating plaster-moulded masks of children’s faces.

## The process of making plaster masks



First we applied cream to protect our skin.



Then we moistened the plaster bandage pieces and laid them over our faces.



After leaving the masks to dry for several days we varnished them with a binder medium so the paint wouldn’t soften our masks.



The masks felt funny and we had to breathe through our mouths.



We looked at ourselves in the mirror while we waited five minutes for the mask to dry and go hard.



Finally we decorated our masterpieces.

**Jade's mask is complete!**

Jenelle  
May



### What's happening here?

A group of boys are dressing up and applying waterpaint make-up, exploring and imagining “what it might be like to be someone or something else”. The teachers follow up on the boys’ interest in different identities by encouraging them to design and make their own costumes (using the sewing machine), make masks, and paint each other’s faces.

### What does this assessment tell us about the learning (using an Exploration/Mana Aotūroa lens)?

This exemplar is about imaginary play. The children are involved in choosing and making props for taking on new personas and (as one teacher describes it) “transforming” themselves. They are playing with identity and are also exploring materials and the technology, including a sewing machine, for working purposefully with materials.

### How might this documented assessment contribute to Exploration/Mana Aotūroa?

These excerpts from the children’s assessment portfolios illustrate for the families, and for the children, how the children’s interests and play themes are taken seriously and how play themes can develop in challenging ways: for example, Wiremu “cut the material to his plan and then used the sewing machine to join the pieces together”.

The teacher has also taken the opportunity to reflect on the children’s painting their own faces as part of their imaginary play. The question she raises (“Can they paint faces whenever they want and with whatever they want?”), shared with other teachers at the centre, contributes to the centre developing a thoughtful, reflective practice.

Revisiting these stories invites discussion about the transformation that a different costume and make-up can create. For example, how is the dressed-up character “new”? What might he or she do differently? In what ways might girls be treated differently from boys?

### What other strands of *Te Whāriki* are exemplified here?

Aspects of art and drama, and the technology associated with them, are also demonstrated in this exemplar. These aspects relate to the Communication/Mana Reo strand of *Te Whāriki*. Experimenting with being a different person is also an aspect of exploring *belonging* to a different community.



## Confidence with and control of the body

# The acrobat



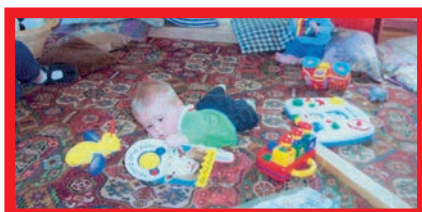
Stretch, kick, roll, push, pull, balance and a press-up for old times' sake. Well, if I had some of Layne's energy and determination, an aerobic workout a day would be a breeze. However, I think I will stick to the leisurely strolls down the beach and leave him to the strenuous crawling task he is mastering so well!

### What learning happened here?



Our aspiration is to support children to develop a sense of themselves as "confident and capable learners" and this portrays Layne's efforts so well. His developing curiosity is becoming a significant motivator for his increased physical activity. He is experimenting with the process of moving around in space and through this active exploration he is gaining the confidence to manipulate his body and develop new skills.

### What next?



To empower Layne's development we will provide the freedom for Layne to practise his physical skills in safe surroundings, while we offer responsive encouragement.

Please feel free to write a whānau story and tell us about Layne's escapades at home, Nikki and Daniel. We are always interested to hear from you and it will be so special for Layne to look back at the relationships and links that developed between his home and the centre, as he grows and revisits his learning journey.

Jo

### Whānau story

Photo brought in from home



### What's happening here?

Photographs from the centre document Layne's growing interest in exploration as he manoeuvres himself across the floor, and the documentation is supported by an additional photograph from Layne's home.

### What does this assessment tell us about the learning (using an Exploration/Mana Aotūroa lens)?

The teacher comments, "His developing curiosity is becoming a significant motivator for his increased physical activity." The photographs show the things that Layne is motivated to move towards in his attempts to explore.

### How might this documented assessment contribute to Exploration/Mana Aotūroa?

The teacher has documented Layne's explorations at a particular time, and photographs taken later will document how his movements change and what motivates him to move. The family is invited to contribute to the assessment by providing details of Layne's escapades at home, and they contribute a photograph for Layne's portfolio. Revisiting the photographs at home and at the centre will enable Layne to "read" his assessments and make connections between the two places.

### What other strands of Te Whāriki are exemplified here?

The addition of the photograph of Layne's explorations at home illustrates how a portfolio can be an artefact of *belonging*, making connections between two environments. Photographs are "visual literacy" and are an aspect of *communication*; they also encourage oral communication by providing a common topic for family-centre dialogue.

# Tapahia me ngā kutikuti – Cutting with scissors

10 May



He mahi  
uaua te  
whakawhanui  
i ngā kutikuti,  
heoi ano ka  
ako au, titiro  
...



Āta titiro, āta  
whakaaro,  
whakarite  
ngā kutikuti.  
Katahi,  
tapahia!  
Anana!



Whaea Mel



Te pai hoki o ou mahi i te rangi nei e Tama!

I kōrero mai a Whaea Re-nee kei te kaha koe ki te parakatihi i o mahi tapahia me ngā kutikuti tēnei wiki Mandela. I kite koe i ahau e tapahia ana i ngā ahau i te taha tepu, kātahi i noho koe ki taku taha hei matakitaki ...

I whakaatu au me pehea te tapahia tika, te mau tika o ngā kutikuti. I whai koe ōku tauira, katahi i mau koe ki nga mahi! Ka rawe tenei ki au, kia kite i to harihoa, to aroha ki te ako. He rite ki te whakaahua whakamutunga nei, he rawe tenei maramatanga hou ki a koe!

Anō te pai o tō mahi i te ata nei Mandela. Kia kaha koe ki te parakatihi tēnei mahi tapahia.

Ma te kōrero ka mōhio, na te mōhio ka mārama, ma te mārama ka mahi, ma te mahi ka matatau!

## What's happening here?

Mandela is learning to cut with scissors. This is a bilingual centre, and this assessment is in te reo Māori.

## What does this assessment tell us about the learning (using an Exploration/Mana Aotūroa lens)?

A number of Mandela's strategies for tackling a difficult task are described here. They are: watching, looking carefully, thinking carefully, following an example, and practising. The photographs record the process in detail, showing his focused attention and his pleasure at his success with the task.

## How might this documented assessment contribute to Exploration/Mana Aotūroa?

Revisiting this story can remind Mandela of a routine for this particular task: looking – thinking – getting the scissors ready – and widening

the scissors, while the photographs illustrate each step. In a similar way, some centres have photographs on the wall that illustrate the step-by-step process for baking something. The story reminds Mandela that he has enjoyed practising using the scissors on other occasions this week, emphasising the value of persevering over time at difficult tasks.

## What other strands of Te Whāriki are exemplified here?

The documentation is a story in te reo Māori about Mandela's achievement. It can be reread to Mandela by his family and the teachers, recognising and respecting the value, in this centre, of *communication* in te reo Māori. The photographs provide an example of visual literacy, telling the story in pictures.

This exemplar also represents the Well-being/Mana Atua strand in the recording of Mandela's success.



# “I’m getting better and better”

It was so good to have the camera handy to catch the magnificent effort of perseverance by Amy today!

The first thing that Amy said to me as I approached was, “I’m getting better and better.”

“What are you doing?” I inquire.

“I’m learning to go over here.”

Amy climbs up on top to the platform to show me what she has been teaching herself to do.

Holding onto the ropes, which I have tied up a day or so earlier, Amy is using these to help her walk across the red ladder. This is not an easy thing to do as the ropes are very loose and this makes balancing somewhat difficult.

I ask you, Amy, if it used to be hard for you to get across, and you tell me that “Yes, it used to be hard.” We talk together about how with practice it has got easier for you.

Amazing!!

Now you can go both ways!

## Short-term review/What next?

Amy, I really liked the way that you are able to see that you are a learner, that sometimes it does take practice to get something right! Even now as an adult it takes me lots of practice to get some things right!

I would love to see this disposition taken into other areas at kindergarten. It is good knowing that you can succeed when you find things difficult.

Jo  
3 April



## What’s happening here?

Amy has been practising walking across a ladder. She is recognising her ability to learn a new skill and comments to the teacher, “I’m getting better and better.”

## What does this assessment tell us about the learning (using an Exploration/Mana Aotūroa lens)?

The teacher emphasises Amy’s perseverance in “teaching herself” to walk the ladder. The teacher and Amy talk together about how, with practice, the challenge got easier. The teacher discusses with Amy whether this project used to be difficult, and she comments on Amy’s progress (“Now you can go both ways!”) as well as on the process that got her there (practising).

## How might this documented assessment contribute to Exploration/Mana Aotūroa?

This documentation affirms Amy’s self-assessment: “I’m getting better and better”, and the teacher provides a general rule about learning: “sometimes it does take practice to get something right!” The short-term review describes Amy as a “learner”, and the reader understands that, in the teacher’s view, a learner practises and continues “getting better and better”.

The teacher suggests that Amy might apply this learning process to difficulties she encounters in other areas, and all the teachers will no doubt now be alert to recognising such occasions.

## What other strands of Te Whāriki are exemplified here?

An aspect of *well-being* is self-management, and self-assessment (as shown in this exemplar) indicates of an ability to self-manage.





## Strategies for active exploration, thinking, and reasoning

# What's over the fence?

### A journey: Discovering the past



#### O-HUIARANGI

Known also as Pigeon Mountain or Pigeon Tree Mountain.

An extinct volcano, which has been partially destroyed by quarrying.

### Exploring our mountain. O-Huiarangi



Climbing the old trees



The weight of the rocks!



Coming down off the mountain

Getting the feel of the mountain. Sliding on the steep slopes inside the rubbish bags  
Shooting down at speed on the slippery grass

### Making connections

### Asking questions

### Researching

### Investigating

Looking for answers that lead to new understandings

### My volcanoes



Matthew came to the centre with a big egg tray. He ran to show me and to tell me all about his volcanoes. I looked and every peak on the tray had an orange spot on the top and wriggly yellow lines running down the sides. Matthew explained to me that the lines on each volcano were the lava flows. I was so impressed! What thoughtful and creative work and no doubt influenced by the books on volcanoes that Matthew has been looking at all week.

Matthew was part of the group who walked to O-Huiarangi this morning. When we came back I found him sitting at the table with his volcano tray and the stack of volcano books. He was waiting for someone to talk to and so I sat down beside him. He found the diagram of a volcano that shows the magma rising up through the core of the mountain and the discussion began! He looked for photos of the orange lava running down the mountainside. Matthew asked me why the rock was running like that. We talked about how hot it was and how heat melted the rock. He wanted to know where the lava had come from. After listening to my explanations of how hot the centre of the earth was he kept asking me, "Why can't we go down that hole?"

### Short-term review

It was hard for him to accept just how hot the crater of the volcano was. Finally he pointed to the picture of the crater lake and the steam coming out of it and he laughed and he said, "I could cook my dinner in it!"

We giggled together. It was lovely to enjoy Matthew's joke at the end of a very intense learning situation.

Matthew was taking responsibility for his own learning. He knew what he wanted to research. He had already explored some ideas at home. He sought out an adult to help him. He understood about lava running down volcanoes and he was searching for the answers to his questions about why the rock was hot and melted and where had it come from. When he commented about cooking his dinner it seemed that he had accepted the heat that was coming from the crater but was still struggling to understand about the centre of the earth being so hot. I appreciated the humorous way he ended the session.

### Inquisitive minds

Today we experimented again with making replica models of our mountain O-Huiarangi.

Cameron was very keen to try again, because last time the sawdust dough we made became very thick and hard to mould.

Today we tried using finer sawdust.

Micah and Cameron became very focused on making their mountains straight away and I really enjoyed being with them as they shared their theories on the mountain. Revisiting the activity stimulated their thinking and they continued to develop what they knew about mountains.

Micah proclaimed, "I'm making the mountain when it used to be a volcano, because I was alive and I was very little, my brother was bigger and he used to walk to the rugby field."

Micah was very intrigued with the shells he had seen at O-Huiarangi, and asked why were they there.

Cameron was able to answer that. He believes that there used to be a big stream, and it all 'drowned', and it is not there anymore, and the shells are left behind. (Great theory, Cameron.)

Micah liked that idea, and put it into his own words, "What is it when it all sinks into the ground?" he asked.

I tried to work through what word Micah was looking for; he talked a lot more and became happy with the words 'it soaks away'.

Micah also talked about the Māori people, and he asked, "Why did they just live there

on the mountain and not down here where our houses are?"

Cameron focused on putting the shells on his volcano, and making the steps again. Micah still believes that he followed a path, not steps; but Cameron says he had to climb steps to get up to the top!

### What next?

Micah is asking about why the Māori people lived on the mountain. Now that we have found out what is relevant to Micah and Cameron, we can find out how to answer their questions. It would be very useful to read our Māori legend books, so Micah can soak up some more information.

### Comment from Robyn.

We can find other ways for Micah to find out about early Māori villages and pā sites. We can return to O-Huiarangi so that he can look more carefully and see the signs of early habitation and use Geoff Fairfield's book<sup>16</sup> as a source of information. We can share this story with Micah's whānau so that together we can learn so much more.



This is Micah's mountain.



This is Cameron's mountain.



### Drawing O-Huiarangi

Leah's story time had finished and the children were all looking at and discussing the shared drawing they had done to show Leah what our mountain looked like.

Suddenly they just had to draw their own, and they spread out onto the floor and began to draw the most amazingly detailed pictures of that awesome mountain O-Huiarangi.



Grace's amazing mountain with the big pōhutukawa tree there on the edge of the drawing.



Matthew's carefully drawn mountain with the steps and the goal posts and the grass and that high, high mountain!



One of the questions the children asked was "Why are there shells on the mountain?"



Micah identified the shells as being like those he found at the beach.

Verity thought that long ago the beach might have been on the mountain.

Cameron suggested that there had been a river and when it dried up the shells may have been left behind.

### Shells up mountains

Recorded by Robyn

Helen, Verity, Micah and I were having a conversation about Pigeon Mountain. Micah wanted to know why the Māori people chose to live on the mountain. When the older children revisit O-Huiarangi next week he will be able to think hard about that and try to work out the answer.

Verity wondered why there were shells on the mountain. She suggested that the beach might have been up there. Micah suggested that the people may have carried the shells up the mountain and dropped them on the way. Then they began to wonder why the people would want to carry shells up there. We talked about the shells we had found at Cockle Bay. I told them that all shells had shellfish in them and Helen said that Māori people in particular really like to eat shellfish.

Micah said that the shellfish would live in the "mermaid" shells. Micah was referring to the cockle shells we had found at Cockle Bay. I remember him calling them "mermaid" shells. He said that the shellfish would live in them because they closed up and opened. He demonstrated with his hands how a "mermaid" shell opened and shut.

Helen and I were excited listening to these two asking questions and then drawing on their prior knowledge and past experiences to sort things out.

Verity wondered what it would be like to live in a shell. We decided that you wouldn't be able to get out or to walk anywhere. Micah thought that it would be very hot living in a shell. Helen reminded them that a shellfish can bury itself in the sand and come back up to the surface again.



### What next?

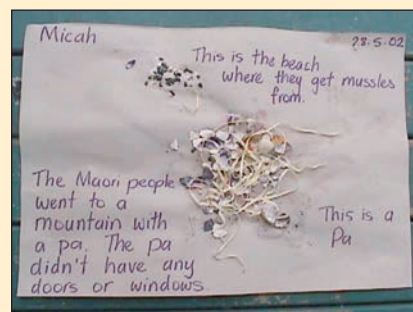
I could bring some mussels to work so we could open them and see the shellfish inside and begin to talk about kai moana. There is a book in Te Reo about kai moana.

What an awesome conversation that was. I learnt so much about what these two are thinking about. Our visit to O-Huiarangi has given us the opportunity to learn so much about so many things.

We need to look at the book on Pigeon Mountain again and find out more about the Māori people who chose to live on O-Huiarangi.

Helen worked with the group of children as they discovered more about kai moana.

This is Micah's drawing after discovering that the shells on the mountain were from the shellfish that the Māori people ate. He discovered that the shells were from the beach and that the people had dumped the empty shells in the rubbish piles – the middens.



Verity made the most wonderful starfish for the Māori people to have.

Evidence was gathering that the children understood the journey the shells had made from the beach to the mountain. There were people involved!

The reason behind why Māori people lived on top of O-Huiarangi was explored and was compared to keeping ourselves safe in our homes.

Jak commented that "You have to lock your house up when you go out." Discussion about the tall fences that they built around the pā drew comments from Jak that strangers would have to ask if they wanted to come in and Georgina added that they would have to say "Please". Matthew thought that they would need a large block to stand on to get over the fence and Jak suggested that throwing rocks might have some effect. Mt Wellington (Mangarei) was discussed in terms of the fact that the Māori people living on O-Huiarangi would have had relatives (hapū) that lived on Mangarei.

The children were also interested in looking at pictures in the book that depicted Māori people growing crops of food on the lower slopes of O-Huiarangi.



### Preparing to return to O-Huiarangi

On Monday a group of four-year-olds: Georgina, Zain, Ryan, Gemma, Sarah, Jak, Amy and Matthew and I gathered to discuss the planned trip for the next day to again explore our local mountain. I read through the trip notice and the children placed the notice in their bags to give to their parents. We went over the questions and interesting points previously raised after our first visit to O-Huiarangi. The book about O-Huiarangi was a useful resource as I discussed with them how the shells came to be on the mountain. They enjoyed looking at the shell pictures taken some time ago on the actual mountain. Jak told me that he thought the Māori people lived on top of the mountain "cause they wanted to".



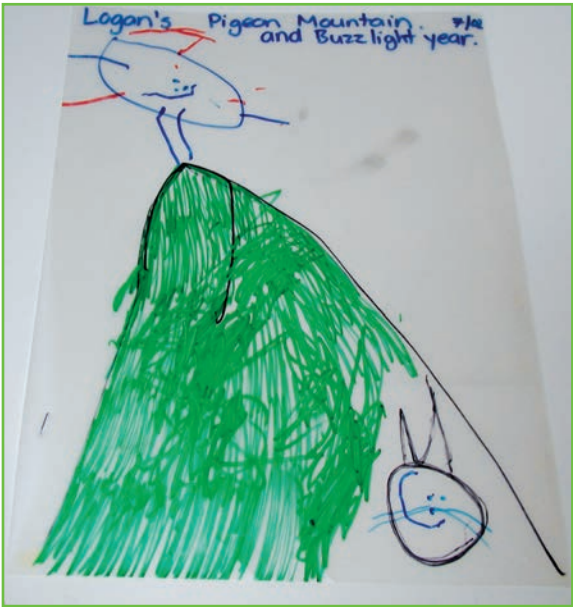
Child: Logan  
Teacher: Kerri

The child's voice

belonging mana whenua	Taking an Interest		Today I had set the table with some interesting books we have on volcanoes.
well-being mana aha	Being Involved		Logan came over when he heard me talking to another child about our visit to O-Huiarangi.
exploration mana aotūroa	Persisting with Difficulty		Logan began turning all the pages and finding all the pictures he liked.
communication mana reo	Expressing an Idea or a Feeling		He was telling me, <b>“It’s going to blow. It’s going to blow.”</b>
contribution mana tangata	Taking Responsibility		I asked Logan, “How would we know when it blows?”
			Logan replied, <b>“The rabbits will go away.”</b>
			Logan then went back to finding the pictures he liked.
Short-term review			What next?
Logan’s example of what he believes will happen if Pigeon Mountain explodes again is very true.			Logan is fascinated with volcanoes.
Logan is recalling his past experiences; when we visited Pigeon Mountain the first time we were told about wild rabbits.			Logan becomes very excited when he talks about his volcano. There is so much we can do.
We also hunted for them, as well as hunting for crater holes up the top of the mountain.			We can play with the playdough and use Geoff Fairfield’s book to find out more information.
			Logan really enjoys dramatic play. He might like to dress up as a rabbit, and we can re-enact Logan’s perception of what happens when a volcano erupts.

Logan this is such an awesome drawing of Pigeon Mountain and Buzz Lightyear looks magnificent on top!


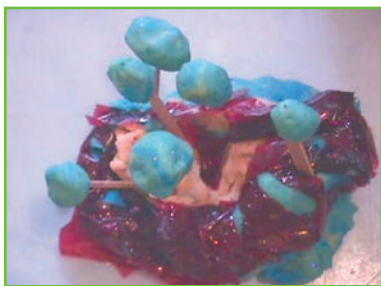
Logan was fascinated by the evidence of rabbits on Pigeon Mountain so I am not at all surprised to see the bunny there at the bottom of the page.





Child: Cameron  
Teacher: Leah

## The child's voice

belonging mana whakahaere	Taking an Interest		<p>Cameron was working alone at the play dough table. He made the volcano out of play dough, coloured plastic, and flat wooden sticks.</p> <p>This is Cameron’s explanation of his volcano: He said, “Leah, when volcanoes get angry they would spit out hot lava all over the ground. The lava actually comes from this (pointing to the hole) and it is very hot. Actually all the trees around the volcano would be hot and will be burnt. It’s just like the Pigeon Mountain story a long time ago.”</p> <p>I asked Cameron where he learnt about this story and he said, “Oh Kerri read the book before.”</p> <p>I asked him which book and he said, “Oh it’s just there” (pointing to where the book is).</p> <p>I went to the book corner and he said, “Oh, not there, it’s here.”</p> <p>He gave me the book and showed me the picture of the Pigeon Mountain.</p>
well-being mana awhiri	Being Involved		
exploration mana whakawiri	Persisting with Difficulty		
communication mana kōwhiri	Expressing an Idea or a Feeling		
contribution mana hōwhiri	Taking Responsibility		
Short-term review			Teacher’s voice
<p>Cameron understood the Pigeon Mountain story that Kerri read to him a long time ago. He remembered that O-Huiarangi (Pigeon Mountain) was surrounded by trees, and when the mountain erupted the trees would die. He was able to refer back to Geoff Fairfield’s book and relate that information to the mountain he was making.</p> <p>He is using different mediums (which he accessed independently) to express his understanding about volcanoes. He combined play dough, sticks, and red cellophane and used his imagination to represent them in his play.</p>			<p>After hearing his stories about the mountains and volcanoes, I also had a chance to share information about Mount Pinatubo in my country (the Philippines) when it erupted in 1991. I shared with him the stories that my mum told me on the phone. I told Cameron that there was total darkness when the volcano erupted. There were many people who lost their houses and families. Some trees, plants, and roads were covered with ashes.</p> <p>Cameron asked many questions like “Why was there total darkness?” and “Why were the trees and roads covered with ashes?”</p> <p>I managed to answer all his queries and had a fruitful sharing of information.</p>



### What's happening here?

This exemplar documents some aspects of a project that spans more than one year. It begins as an exploration of “what’s over the fence” from the centre and develops into a wider exploration of “our water, our mountain, our people”. This exemplar is about exploring a landmark, the local mountain, O-Huiarangi (known in English as Pigeon Mountain). Children and teachers visit the mountain on several occasions and find signs of early habitation. The children discover some shells and ask, “Why are there shells on the mountain?” For many, this is a starting point for an investigation. Among other things, they explore their ideas and understandings about the nature of volcanoes.

### What does this assessment tell us about the learning (using an Exploration/Mana Aotūroa lens)?

The learning stories and photographs included in this exemplar show the children as capable and competent learners, who not only ask their own research questions but also use their prior knowledge to form their own working theories. The children are also increasing their knowledge of a feature of the land that is of local significance. The teachers at this centre are encouraging the children to build a relationship with the local environment.

One key question, which the children discuss and theorise over for some time, is “Why are there shells on the mountain?” Cameron suggests that there might have been a river up on the mountain and that the water had sunk and left the shells behind. Micah suggests that people might have carried the shells up the mountain, but this raises the question of why people would want to carry shells up a mountain. In order to help them find the answer to this question, the teachers explain how people eat shellfish. The children discuss this new fact and come to the conclusion that probably the people who lived on the mountain carried the shellfish up and discarded the shells.

Once they realise that people lived on the mountain, the children want to know why the people had left the mountain and why they don’t

live there now. This leads to a huge investigation about the people who lived on the mountain.

The children plan many of the investigations they conduct, and these are meaningful and engaging activities to an increasing number of children.

Representation and exploration of their ideas about O-Huiarangi were distributed across verbal discussion, drawing, painting, modelling material, collage, and books about volcanoes.

### How might this documented assessment contribute to Exploration/Mana Aotūroa?

Because the children’s work is documented, they know that the teachers value what they are doing. Because the learning is visible, the teachers and the children can revisit the information and establish more accurately each child’s strengths and interests. It is clear from the documentation that opportunities for assessment are constantly presenting themselves. Learning stories record what happens: the moments of discovery, the conversations and, in their art, the children’s responses to these discussions and discoveries. The photographs and stories are there to be revisited and discussed. This documentation enables the children to share their experiences more deeply with the families and others at the centre.

### What other strands of Te Whāriki are exemplified here?

This exemplar integrates all the strands of *Te Whāriki* as the children work individually and in groups to share and develop their ideas about the living world and how to care for it. For example, the work they do on the shells and on seafood leads them to produce artwork that links kai moana with the history of pre-European Māori. A very holistic picture of learning emerges that weaves together the all strands of *Te Whāriki*.

Illustrated is the increasing complexity of the stories and the many ways in which competence, community, and continuity are being built through the documentation. The horizon for these children is being lifted into a different place so that they can see and experience more of the world in which they live.

# Sabine designs a swing

Child's name: Sabine

Date: 30 January

Teacher: Shelley

belonging maana whakamau	<p>Yesterday Sabine asked me to help her make a swing. She had seen one on <i>High Five</i>. Sabine described the swing that Charlie used to swing away. We found a hoop and hooked it up on the swing frame. It was not quite what Sabine wanted but it was time to finish so we decided to work on it the next day.</p>
well-being maua ora	<p>Today Sabine sketched the swing. We collected ropes, clips, and chains and experimented with heights.</p> <p>Sabine wanted to be able to sit on it. She sat on the trapeze swing to measure how high she wanted it. We used the chain and clips. We then lowered it. Sabine then tried it but found it too low to swing upside down on. The swing went up again. Sabine and her friends tried this but Sabine went back to the original idea of what she wanted ... a swing to sit in and swing!</p> <p>Down came the swing again until the level was just right. Then the hose was hard to sit on so we got some padding and stuck it on.</p> <p>Sabine said, "Still hurts the side of my bottom" so we added more padding.</p> <p>This was how she wanted the swing. We talked about how the swing went very narrow once they sat on it.</p> <p>A final decision was made to put wood at the top. We measured how far the swing was from the top and how long the rope needed to be. The design was redrawn and faxed to Swings and Things to be made.</p>
exploration maua whakaaro	
communication maua kōwhiri	
contribution maua huarua	<p><b>Short-term review</b></p> <p>Sabine was very clear about what she wanted. She experimented and eliminated what she did not want until the outcome matched her idea.</p> <p>Very much in control with a keen audience. This motivated other children into thinking of swings and using the "Sabine swing".</p> <p><b>What next?</b></p> <p>A new swing!!!!!!</p>

The design



Sketching the swing



Sitting on the trapeze swing to measure the height.



Trying it out



Sitting. Hurts to sit on it.





Padding the  
seat.



Swinging!

### What's happening here?

Sabine has seen a swing on television and decides to design and make her own at the early childhood centre. The teacher helps her.

### What does this assessment tell us about the learning (using an Exploration/Mana Aotūroa lens)?

This exemplar documents a number of strategies for active exploration. The project takes two days, with Sabine starting by sketching a plan. The problem solving involves a considerable amount of measurement, plus trial and error, to ascertain the correct height and some adaptation to make the seat softer.

### How might this documented assessment contribute to Exploration/Mana Aotūroa?

The short-term review summarises the learning in this exemplar: "Sabine was very clear about what she wanted. She experimented and eliminated what she did not want until the outcome matched her idea." Both Sabine and the teacher work together to problem-solve, asking "how" questions along the way. The documentation can be used to remind Sabine of some of the processes involved with being a problem solver, and the accompanying photographs document the processes well.

### What other strands of Te Whāriki are exemplified here?

This exemplar involves measurement, which demonstrates the purposeful use of mathematics as outlined in the Communication/Mana Reo strand of *Te Whāriki*. At the end of the episode, the design is copied out neatly and faxed to a business that makes equipment for children, so Sabine's work potentially contributes to her sense of *belonging* to a wider community of problem solvers. Authentic problems like this one have exactly this potential; and the faxing indicates that the teachers recognise the relevance to children's learning of *communicating* with the wider community.

# A budding archaeologist

Logan, knowing your interest in archaeology, I wanted to share a couple of my photos that I took in January at two archaeological sites near X'ian, in China. The first one is really old, and what they are finding dates back to 151 BC, still thousands of years after dinosaurs though, and the second is of the second digging site of the famous terracotta warriors. Both of these are active sites, and won't be completed for many years. It's really exciting and interesting, but to my knowledge, they have found a few human bones, but no dinosaurs or fossils.

When I was looking around at the shop Nature's Window at St Luke's, I discovered these blocks with dinosaur bones inside that you have to dig out very, very carefully with a scraper and brush, just like the archaeologists in China, so you don't damage the bones or whatever you are looking for in your dig, or archaeological site. As soon as I saw them, Logan, I thought of you and your love of dinosaurs and I remembered you saying that you wanted to be an archaeologist when you grow up.

You started this archaeological dig on Tuesday, 29 March. You were so excited as you started uncovering bones. When you discovered the second one, you called out and told me, "I've found another bone right over here. It's a triceratops I think." Your friend Matthew was really interested in what you were doing, and filmed some of this video footage before going to the science area to work with Joyce. After you had discovered another bone, which now made three, you took the slab over to show Matthew and Joyce.

I was really impressed with how patient and gentle you were being, and also how you explained to your friends what you were doing. This archaeological dig was taking a very long time, and by the end of the



session you hadn't completed it, so you had to continue the next day.

The next morning you arrived fresh and ready to go again. When you completed uncovering all the bones, they were covered in mud, so under your friend Ezekiel's supervision, you scrubbed them very carefully in a bowl of water, using a cotton bud. You were very particular, working to get every scrap of dirt off, and Eze pointed out any specks that you had missed. After cleaning all the bones, but before you threw out your scrapings, you checked the bones by laying them on the table to make sure you had them all.

With all the pieces of the skeleton present and accounted for, you tried putting them together, but it was very frustrating as the legs and tail kept falling off. We tried to think of ideas that might solve this problem, and I suggested that using the glue gun to fix the bones together might do the trick. You thought that was a very good idea, and asked Jewels if she would help you.

When you finished it, you called to me, asking me to come and look at your triceratops skeleton. It was awesome, but looked a bit sleepy because it kept falling over, but you soon sorted out that problem by gluing it to a block of wood.

You were so proud of the result of all your hard work, and took it round the kindergarten to show everyone. You wanted everyone to be able to see your skeleton, but were worried that they might touch it and break it, so you asked if it could be put in the locked display in the science area. You did a great job Logan. We are very impressed with your knowledge and your eagerness to share it with all of us - thank you.





### What learning has happened?

Through this activity Logan was able to practise some of the knowledge that he had gained from books and documentaries. Logan's use of language while digging for the dinosaur bones was amazing, as was his prediction of the species of dinosaur very early in the dig. The manner in which Logan shared his knowledge during this activity was inspirational. It was at times similar to that of a lecture or documentary.

Logan discovered that, just as on a real archaeological dig, one has to be extremely gentle and careful, as he found the bones were very easily broken, after breaking one of the leg bones. He was very disappointed when this happened, and immediately slowed down and took much more care.

29 and 30 March  
Teacher: Sally



### What's happening here?

The teacher, recognising Logan's interest in archaeology and dinosaurs, shares her own photos from archaeological sites in China and provides an interesting experience for him.

### What does this assessment tell us about the learning (using an Exploration/Mana Aotūroa lens)?

This long contribution to Logan's portfolio is by a teacher who shares Logan's passion for archaeology. The short-term review describes the aspects of exploration that this exemplar includes: reinforcing knowledge gained from books and documentaries, using scientific language, predicting, sharing the knowledge, being careful, and learning from mistakes.

Logan also uses problem-solving skills to stabilise and protect his fragile construction. He glues it to a block of wood but is aware of the need to make it available for others to see and so requests that it be placed in the locked display cabinet.

### How might this documented assessment contribute to Exploration/Mana Aotūroa?

This exemplar documents a sharing of interests between the teacher and the child: the teacher has included her own photographs and communicated her excitement about actual archaeological sites in China. This is a shared story, and both Logan and the teacher (and Logan's family and whānau) will retell the story and add to it in subsequent conversations.

### What other strands of Te Whāriki are exemplified here?

The teacher reminds Logan that this activity is what archaeologists do in the "real" world, and she clearly implies that through his interest and his skill he *belongs* to that wider community.

## *"I thought about it like this"*

Luka was playing on the swings when he went to the shed and brought out the small sawhorse. He put it under the swing and used it to climb up to the wooden bar. He informed me that "I learned how to do this." I asked him how he had learnt this. "I thought about it like this, hmmm, and then I did this and that's how I got up." Luka showed me how he had tried to put the sawhorse underneath the swing. He showed me how he was thinking, by showing me how he screwed up his eyes and went "hmm".

### *What learning is going on here?*

I was very interested that Luka has an understanding of the learning process. He knows that this involves thinking about something and trying something out. He was able to self-assess this process, which is quite a complex thing to do. Often children are not able to articulate how they "know" something, but Luka is able to clearly explain this process. It is so exciting when children develop metacognition before they go to school as it helps them assess how to do things and what they need to do to learn something new.

### *Possibilities and opportunities*

It was so cool that you could tell me about your learning, Luka. I can see that you tried to do something difficult and managed to do this. That shows great persistence. Being able to explain how you learnt to do something means you can show other children and be a great teacher. Thanks for showing me how you can climb up on the swing. I was very impressed.

Alison, 27 July

### *Teaching and learning*

Ronan asked me if I could lift him up onto the swing. I explained to Ronan that he could learn to do this by himself and that Luka would be able to help him as Luka had just learnt to do this the day before. Ronan went and found Luka who then demonstrated how to pull himself onto the swing. Ronan then had a go and Luka talked him through the process. Within no time Ronan was swinging himself on the swing.

### *What learning is going on here?*

Once again Ronan was able to seek help from an expert friend to acquire a new skill. With perseverance Ronan successfully achieved what he had set out to do. What a sense of achievement you must have felt, Ronan. I wonder what you will learn next?

28 July

### *Luka, the teacher*

This week a few children have wanted to get up on the wooden bar swing. We have sent them to look for Luka to show them how to do it. Luka has gone through the process and explained what to do and waited and helped each child to get up on the swing.

*Thank you for being such a great teacher, for sharing your expertise and helping other children learn how to do something new.*

28 and 29 July

### *What's happening here?*

Luka solves a problem, explains the process to the teacher, and then teaches others.

### *What does this assessment tell us about the learning (using an Exploration/Mana Aotūroa lens)?*

One strategy for learning how to do something difficult is to "think" through the activity first. Sportspeople have sometimes acknowledged this as an important strategy for success, and it appears to be the strategy that Luka uses in this exemplar: thinking about the difficulty (getting up onto the swing) and then visualising a solution to the problem.

### *How might this documented assessment contribute to Exploration/Mana Aotūroa?*

The teacher notices, recognises, and responds to Luka's problem solving, and on later occasions, she and other teachers refer children with the same problem to Luka for advice and assistance. The documentation may have alerted other teachers to the value of expanding the realm of involvement in a problem-solving situation from "I" to "we".

Writing down the progression of stories reminds Luka (and his family) that he is a competent problem solver who can both pass on his expertise and assist others to solve the same problem.

### *What other strands of Te Whāriki are exemplified here?*

The process of teaching others – explaining, talking people through the process, and physically assisting – is also a dimension of the Contribution/Mana Tangata strand.



## Working theories for making sense of the natural, social, physical, and material worlds

# So, what is camping?

### *A Group Learning Story*

Date: 1 February

Teachers: Marilyn & Ruth

#### *Noticing*

When the children returned from their holidays we noticed that there was a lot of talk about various holiday topics within the centre. However, it seemed that camping was a topic that was most often discussed among various children. So we called a meeting to investigate this further. The children took turns sharing their holiday experience, and this is our first kōrero!!!

#### *Holiday news*

Jimmy: Mum and Dad built a big tent with a bedroom and a lounge. At night time I slept in the tent. At the daytime I got dressed and played. We needed to put them on in the daytime cos we needed to have clothes. I jumped in the river. (Jimmy demonstrated this with great enthusiasm.) Some snow came off the mountains and it went down into the river and melted cos the sun was out. I walked into the water holding my dad's hands. I made some friends and one was a boy. If he went that way we would run that way.

Ruth: Did you chase the boy?

Jimmy: No, he chased us.

Ruth: So you made some new friends.

Kim: Did the boy run really fast?

Kelly: How fast did you go?

Jimmy: Sometimes I run so fast!

Kim, Kelly, Jamie: Was there stones?

Jimmy: Yes, but not on the grass, just in the river.

Ruth: How did you cook your food?

Jimmy: On a fire.

Ruth: Did you take your toilet with you?

Jimmy: NO! We went to the toilet place.

Jade: I went camping and you had to do wees in the bushes.

Kim: I stayed home and slept. I dressed up and put my own clothes on.

Taylor: I went rock climbing and we went swimming.

Ruth: You went rock climbing. Can you tell us more about rock climbing? Did you get up to the top?

Taylor: No, I was too scared.

Ruth: Did you have any special equipment?

Taylor: Someone was down there and they made sure you didn't fall down.

Sam: I went on an aeroplane to Auckland. Mum sat beside me. I got some lollies.

Ruth: What are the special names for the people who work on the planes?

Kelly: Pilot, Lolly people.

Jimmy: Drink people.

Ruth: Who lives in Auckland?

Sam: I goed with my mum and dad and my brother. I went to a motel.

Luka: I stayed home and went snow boarding in my room.

Ginny: I went to camping. We went to Pioneer. I went under with my swimming togs and my goggles. I did that (shaking her head from side to side) under the water.

At this point Ruth took up a pen and told the children that as a number of them had talked about camping, we would use the whiteboard to note some ideas and knowledge that we had about camping.

#### *Camping*

Ruth offered Ginny the pen to scribe her ideas on the board about camping. Ginny took the pen and very carefully drew a tent. (The graphic was half round with the open door carefully placed in the middle.)

Ginny: We've got a door on Nana's tent. When you go camping you need a tent!

Ruth: So, what is camping?

Jimmy: Sleeping somewhere else!

Kelly: You take sleeping bags.

Kim: When I go camping I take blankets. My grandma takes a camper van.

Jamie: We have blankets in our camper van.

Ruth: What else do you need?

- Jade: Food.
- Jamie: There might be an oven in the camping tent?
- Jade: You need boats when you want to go camping at a river.
- Kerry: You bring plates for food, a spoon for breakfast, and cups.
- Jamie: You need water.
- Marilyn: What if you are near the river and you catch a fish? How would you cook it?
- Jade: You make a fire.

### *Children's Representation*

Following this discussion the children were given paper and pens in order to draw their representational ideas about camping.

### *Recognising*

While I value small groups, the value of large-group discussions and the sharing of ideas, as demonstrated here, can be a valuable process. The children were able to draw on and weave prior knowledge into this discussion (as evidenced by Jimmy's expression of ideas about the mountains and the snow melting). This is a topic we had covered in a previous experience where the children drew the melting of snow and the development of rivers. This topic was also discussed in our snow project. (I wonder if this prior knowledge is a reflection of these experiences?)

The children display knowledge of the format of meetings. They are competent and confident sharers of information.

Ginny has become more competent and confident in a group. This is the first time I have witnessed her take up a pen and draw her ideas on a whiteboard to share with the group.

I have also noticed that the adult scaffolding of the discussion in these group projects is becoming less significant as the children take more responsibility for driving the discussion.

It became evident as our discussion developed that Kim and Jamie understand camping as involving camper vans rather than tents.

### *Responding*

It would be interesting to ask the children more about the equipment required for camping and perhaps explore this avenue further. It would be

interesting to take up Kim and Jamie's idea and look at caravans and campervans. I wonder how the graphics will develop and what the before and after representations might look like?

It would be great to take this project out into the community and beyond the centre fence.

### *A parent's voice*

Just about every day for at least 3 weeks before the camping trip we heard about it from a very excited Isaac. Camping is nothing new to Isaac but having all his "big" and "little" friends there was something to look forward to.

He had never been to Spencer Park but he heard all about it from pre-school. He had a picture in his mind about swimming, roasting marshmallows on an open fire, and the sea. I think the thought of going on a trip with his pre-school **and** with his family, Mum, Dad and 2 older sisters, was also important to him.

On arrival, Isaac could see all his friends, but being in a totally different place, went a little bit shy. This was quickly overcome and he had a great time over the whole weekend playing with his friends. Big sisters, Arnia and Elysia, also played a useful role, playing with the pre-schoolers, and especially taking them to the play park where the flying-fox was.

For me the highlight of the weekend was the walk to the beach with our fellow campers. It was almost dark on arriving at the beach. It was lovely listening to all the comments and chat from all the pre-schoolers on that walk. A couple of the children were saying to each other how special it felt to them.

The whole event was so successful in a number of ways: helping families get to know each other; seeing the staff relate so well with the children, each other and all family members, in such a relaxed way; seeing the children playing and sharing together; the knowledge that this camping event was the culmination of the children's camping project due to the staff's excellent approach of listening and pursuing the individual child's interest. Thank you teachers. Isaac is looking forward to the next trip and having that open fire to toast marshmallows!

Debbie

Apart from Jimmy, the children's names used in this exemplar are not their real names.



### What's happening here?

After the holidays, the teachers notice that a lot of the children are talking about their experiences camping, so they call a meeting to investigate the topic further. They also organise a camping trip for the children, and although the details of the trip are not included in this exemplar, comments about the trip by one of the parents have been added.

### What does this assessment tell us about the learning (using an Exploration/Mana Aotūroa lens)?

Jimmy provides a verbal description of his experience of camping, and the teachers (Ruth and Marilyn) and other children ask him questions. The teacher then encourages the children to note down their ideas and knowledge of camping by drawing details on the whiteboard, and the group discusses the different representations.

The teacher notes that the children have different working theories about camping, and a wide range of experiences is discussed: for some, camping involves a tent, for others a camper van. The teacher scaffolds the children's discussion.

The teacher also recognises the children's growing ability to draw on prior knowledge – not just of camping but also of an earlier topic discussion about snow – and also their prior knowledge of taking part in meetings.

The Parent's voice provides a commentary on a family member's experience at a camping trip organised by the teachers, acknowledging the success of the event.

### How might this documented assessment contribute to Exploration/Mana Aotūroa?

The teachers make a display of the children's comments and drawings, and children and families will revisit this information both before and after the camping trip.

The teacher comments on the development of group discussions at this early childhood centre: questioning and discussing topics of interest are clearly features of its culture, and the teachers are monitoring the children's development of these skills. This written learning story will enable the other teachers to continue reflecting on the

process of questioning and discussing as a large group. The teacher notes that the children now understand the format of a meeting, that they can draw on prior knowledge and weave it into the discussion, and that the adult scaffolding is "becoming less significant as the children take more responsibility for driving the discussion". She also comments on Ginny's growing confidence in the group situation.

### What other strands of Te Whāriki are exemplified here?

The teachers here are exploring the role of large-group questioning and discussion: this is something that they do here, part of belonging to the community of learners at this early childhood centre. The documentation also notes that the children are taking more responsibility and contributing more to this process. Both verbal and visual *communication* are part of this exploration.

# Te haeata – Dawn

Child's name: Tia

Date: 16 August

Teacher: kuia (grandmother)

A Learning Story		
belonging mana whenua	Taking an Interest	<p>Tia woke at 6.30 a.m. I met her in the hallway and asked her if she wanted to come into my bed upstairs. She said yes. I told her there was a surprise up there for her and she was to leave the light off. We climbed into bed and I asked her to look out the window. The surprise was the Southern Cross pointers, which were still bright in the sky. I told her the traditional names of the stars and she repeated them. She was in awe of what she could see, I believe. I have introduced her to the evening star on many occasions and this was the first opportunity for me to show her the morning stars. As dawn broke the stars became more faint until they disappeared. I told her the stars were going to sleep because the sun was rising. We watched the sun rise and I sang the karakia to welcome the sun. She has a special relationship to the stars and the moon and often points out the moon during the day.</p> <p>As the dawn was breaking the morning chorus began. Tia was asking, "What's that?" I told her it was the birds singing to the dawn, welcoming the sun.</p> <p>In her bedroom is a large painting that features a bird from the ancient cave drawings. I explained what it was. She repeated the names after me.</p>
well-being mana aha	Being Involved	
exploration mana aotūroa	Persisting with Difficulty	
communication mana kōwhiri	Expressing an Idea or a Feeling	
contribution mana tūāwhiri	Taking Responsibility	

## What's happening here?

Tia's grandmother shows her the morning stars and teaches her their traditional names. She also teaches Tia the name of the bird in a painting in Tia's bedroom.

## What does this assessment tell us about the learning (using an Exploration/Mana Aotūroa lens)?

This story is about Tia learning about stars, the moon, and a bird from her grandmother, who comments that Tia "has a special relationship to the stars and the moon". The grandmother sings a karakia to welcome the sun, demonstrating that knowledge includes a spiritual dimension. Linda Tuhiwai Smith says that "Many indigenous creation stories link people through genealogy to the land, to stars and other places in the universe, to birds and fish, animals, insects and plants. To be connected is to be whole."<sup>17</sup>

## How might this documented assessment contribute to Exploration/Mana Aotūroa?

This story has probably been written down for the teachers at Tia's early childhood centre. It will be shared among the teachers and exemplifies Tia's sense of relationship to the stars and the moon and her familiarity with spiritual rituals (karakia) for different occasions, such as the rising of the sun.

## What other strands of Te Whāriki are exemplified here?

Although this exemplar is about different forms of knowledge and knowing, it also represents a view of *belonging* to the wider world, in this case the natural world of stars and the universe, as well as the world of birds, fish, animals, insects, plants, and the land.



# Fire at the marae

## 8 November

It is so hard to believe for all of us that our beloved marae has been burnt down. The children are constantly talking about it. Many drive past it each day to come to kindergarten. The teaching team has engaged in much dialogue with the children and together they have come up with a plan. Not just some ordinary plan, a marvellous plan indeed.

This is what has been decided at our morning meetings with children. Whaea Taini has lost so many precious things and so why not make her something precious from the B.B.K. children. "Yes, a good idea," thought Daniel P. and Oliver. Daniel suggested a taniwha like the one we had in our garden. It was put to the rest of the group and the decision – unanimous. We would ask Steve if that could be the focus for this Friday. Steve is always extremely agreeable and suggested we must get to work with our plans immediately.



Children hurried to the table to sketch out their plans, chatting about the burning down of the marae, and some thought that the taniwha would be able to catch the bad guy and kill him!! Others drew much gentler taniwha surrounded by flowers. The drawings are stunning and Steve visited later in the day to view them. He is feeling very positive about this taniwha and suggests that we



make it on a smaller scale in case Whaea Taini doesn't have much space in her office at the moment.

With the koha collected, the card nearly finished and the taniwha about to begin there is a feeling amongst us all that this will bring our community even closer. Since our earlier trip to the marae, children and families have embraced the bicultural weave that has emerged through our curriculum. I guess we all felt part of us was affected when we heard the news of the arson.

Some children were bewildered and needed to go and visit, whilst others collected news cuttings and shared their feelings at mat time and through their drawings. On Monday next week we shall count the money together on the mat, wrap up the taniwha, and make a special delivery with aroha to Whaea Taini. I hope now some of our anger will disappear!!!!



## Parent's voice

29 October

Child: Daniel

### Marae fire

Daniel was very taken with the tragedy of the marae fire. On the way home from kindy he spoke about what had happened very seriously and was angry with the "baddies" who did the terrible deed. He said it was very sad! He had enjoyed the visit to the marae earlier in the year. He asked if we could go and see what had happened. We did so immediately. The ruin was covered in blue plastic. I explained why they had covered the building. There was a pile of burnt chairs at the gate. He saw how the fire had damaged them and could smell the burnt, smoky smell.

On the way home, he asked what had happened to all the objects that were inside the building and to

the wood carvings. (Later in the evening when he was telling Dad the story, he demonstrated how one carving had stuck out its tongue and looked very fierce!)

We chatted about how fire damages and destroys things, with many, many, many questions from Daniel on the subject. Later Dad made a small fire outside to demonstrate what fire does and how it can destroy.

Daniel came to me during the afternoon and showed me two drawings he had done about the fire. He showed how the marae was on fire, one had a fire engine in it, with the water hose, a fireman and two Māori people. It showed the chairs inside the marae. The other drawing included a fire engine and police car, a sign telling people what had happened, a “baddy” lighting the fire, someone inside the fire, who had to be rescued, chairs, other furniture and carpets burning, the wood carvings were initially drawn with faces, then covered over, because they were damaged in the fire. (The two drawings were included in the portfolio.)

Out of this tragedy, Daniel has had a big learning experience about the danger and destructive ability of fire, about the “bad” people who do this type of thing. It ties up with his recent observation of the ever-present graffiti and the whys and whos of that damaging subject.

## Mixed emotions

### Prue

How can I describe the feelings? What an amazing experience we all had gathering at our beloved marae (devastated by fire) to extend our heartfelt feelings and aroha to Whaea Taini.

The children, their whānau, Steve and his pupils and our teaching team had been working towards

this day for a few weeks and little did we know the emotion exchanged between us all when presenting the taniwha to Whaea Taini would overflow as it did. Some of us cried, some of us reflected on what had happened and still felt angry, but the children stood reverently still and took in the proceedings with such dignity. They just knew what was expected.

Eventually smiles emerged as Whaea Taini accepted the taniwha and proud children moved forward to hongi or kiss Whaea Taini remembering so clearly that this is what one does on a marae. Children were encouraged to lean forward and touch the “broken house” (children’s words) and view for themselves the remains of a special place they had visited five months earlier, a place full of wonderful stories and memories.

Whaea Taini assured the children that the taniwha would play a significant part in the rebuilding project and she felt that the bush walkway once repaired would be the best resting place for such a fine creature. She felt he would be admired by many!! We could tell that she was very touched by receiving such a beautiful gift.

To be able to share these precious moments with Steve and the school children made this healing journey so special. They played such a vital role in the creation of the taniwha and to have them be part of the presentation gave it real meaning for our children. It would have been out of the question not to involve them.

I am left wondering now about how Daniel feels, and whether he will continue his drawings. There will no doubt be “conversations” around our visit and I look forward to children expressing their feelings and engaging in robust reflection on the reciprocal relationship we have with Whaea Taini. We look forward to her visit in the near future to bless our native garden.





### **What has surprised our teaching team?**

Our children have taken on board Daniel's pain and shown such interest in the many drawings he has done at home and at kindergarten about the fire. They have engaged in deep and meaningful conversations about the fire and perused the many newspaper cuttings with much interest. Their voice needed to be heard and they expressed it in many forms, some creatively using mixed media, through drama and music, but most of all they wanted to question and ponder over the precious carvings and artefacts that had been destroyed and what they could do to make Whaea Taini happy again.

### **Did their thinking change our view?**

We began to reflect more on our practice and revisit our thinking on the role we needed to play with supporting these children in their understanding of something so devastating as losing something precious in a horrible senseless arson attack. Were we prepared to answer questions honestly, would we gloss over certain aspects or was this demeaning to children's intelligence? It was decided unanimously that our image of the children stood strong and we valued their thinking and reasoning and yes we would embark on a journey with them to make sense of this disaster and hopefully heal some of the hurt and lingering uncertainty.

### **How did the visit impact on us all?**

It opened up a new world, a world of reciprocal relationships, a reaching out and embracing of two cultures, a sharing and understanding which needed no words. The reverence and pride the children showed during the ceremony gave us such strength and made us aware that when children say "I just know" that we need to take notice and respect that, yes, they intuitively do know some things. Through such open and meaningful conversations with all parties there was a consensus that we did the right thing. Our visual documentation tells a wonderful story of togetherness, pride, and humility.

### **What's happening here?**

A parent and a teacher at a kindergarten report on the children's responses to a fire at the local marae.

### **What does this assessment tell us about the learning (using an Exploration/Mana Aotūroa lens)?**

Children, families, and teachers explore an event of great significance for the local community. The parent comment describes the ways in which the child Daniel explores the fire. He visits the burnt building. He asks lots of questions, and his father builds a small fire to demonstrate "what fire does and how it can destroy". Daniel communicates his own understanding of the event through drawings.

The children at the early childhood centre and a visiting artist, Steve, draw plans for and construct a taniwha to present to Whaea Taini at the marae as a precious gift, expressing their sense of loss and attachment to the marae.

### **How might this documented assessment contribute to Exploration/Mana Aotūroa?**

The documentation, the drawings, and the photographs will provide a focus as the children work through their learning and make sense of this tragedy.

### **What other strands of Te Whāriki are exemplified here?**

The kindergarten community has reaffirmed its closeness to the local marae, illustrating a sense of *belonging* to the wider community.

# Self in the mirror



Matthew is becoming aware of his physical presence. He found a mirror and seemed intrigued by what he could see in it – himself! He spent many moments looking intently at the reflection before jiggling up and down and from side to side, his eyes gazing at the image and looking at it from all the different angles. He revisited the mirror throughout the afternoon, showing great interest in his new discovery.



Shelly  
15 January

## What's happening here?

Matthew is intrigued by his reflection in a mirror that he finds at the early childhood centre.

## What does this assessment tell us about the learning (using an Exploration/Mana Aotūroa lens)?

This is an exploration of self, or at least a working theory for making sense of one's own reflection in the mirror. Matthew is finding out what happens to the reflection when he jiggles, moves from side to side, and looks at the mirror from different angles. He is intently focused on this new discovery and returns to the mirror several times during the afternoon.

## How might this documented assessment contribute to Exploration/Mana Aotūroa?

Matthew will be able to revisit the documentation, mostly photographic, as his learning progresses. Barbara Rogoff, in *The Cultural Nature of Human Development* (2003), writes about two basic processes of guided participation and communication: bridging and structuring. Bridging is when the participants bridge different perspectives. Structuring is when adults structure shared activities to make them meaningful and accessible to children.<sup>18</sup> Many such items collected in a portfolio become mutual structuring devices for participating in conversation and therefore developing language.

## What other strands of Te Whāriki are exemplified here?

This exemplar demonstrates the importance of being aware of the value of resources that stimulate interest and learning. Having a mirror available at the right height allows the baby to explore more easily. This is an activity where the researcher (the baby) is absolutely in charge of the research. This kind of agency is implicit in the Well-being/Mana Atua strand.



# ‘O le matamatagā tusi

Esther  
16 August



Na maitauina lava le fiafia o Esther ‘e matamata i lana tusi. Na susu’e fiafia lana tusi ma iloa ai ona ata. ‘E fa’asinosino solo i ona ata ‘uma ma fai mai “‘o a’u”. Na lolofi ane iai tamaiti i le fia matamata. Na musu i le to’atele o tamaiti ona toso a’e ai i lalo mai le laulau ona matamata ai na’o ia.

Na fia matamata uma ai ma isi tamaiti ona ave ane foi lea iai o latou tusi e matamata ai.

Fai mai Esther, “‘E ave ata iā mummy”, ona tali atu lea o le faia’oga, “‘E ‘ave ‘ātoa lava le tusi lenā iā mummy.”



## ‘O se a’oa’oga na maua mai ‘i le tala? (What learning took place?)

‘O Esther na fa’aalia lava lona naunau ‘e fia matamata ‘i lana tusi ‘olo’o fa’amaumauina ai tala’aga ma ata ‘o ana galuega fai ‘i le ā’oga. Na ‘umi lava se taimi ‘o tilotilo ma ta’uta’u lona igoa pe ‘ā va’ai ‘i ona ata. Na maitauina fo’i e Esther lona ata pepe ‘olo’o i luma ‘o le fa’ava’a. Na ‘umi se taimi o tilotilo fa’ato’ā fai mai ai ‘o ia. ‘O se fiafiaga ia Esther lona fa’asinosino o lona ata i ā ‘i lātou na lata ane na fia matamata.

Ua fa’aalia mai lava ‘i le ata ‘o Esther lona fiafia tele ‘ina ‘ua ia va’aia ona lava ata (seeing the familiar). ‘O le matamataga i lana tusiata na fa’aalia lava le tāua ‘o le toe asiasi ma iloilo galuega fai ‘ua tuana’i (revisiting/reflecting on her previous work in the assessment portfolio).

Na tele lava le talatalanoaga na fa’atupulia mai ‘i le matamatagā tusiata (listening/talking among the children). Na fa’ailoa mai ai le māfanafana ‘o lō lātou mafutaga ma le ā’oga ma lona si’osi’omaga (sense of belonging).

‘O se a’oa’oga tāua ‘ua fa’ailoa mai ‘e lēnei tala, ‘o le mālosi ‘o le ata ‘e mafai ai ‘ona



fa’amatalaina ‘i ni upu se tele (pictures/photos tell a thousand stories), fa’atasi ai ma le mana’o ‘o Esther ‘ina ‘ia ‘ave lana tusiata ‘i le fale ‘e matamata ai lona tinā (taking ownership/requesting to take the portfolio home to Mummy).

## ‘O le ā se ‘auala e fa’alauteleina ai lenei a’oa’oga? (What next?)

Pe mafai ‘ona teuina ia tusi ‘i se nofoaga ‘ina ‘ia mafai ‘ona fa’atagaina ai le fānau ‘ona lātou matamata ai, ‘i lalo ‘o le va’aiga a faia’oga. Pe fa’atulagaina foi se taimi ina ‘ia mafai ai ‘ona fa’ailoa ‘i le fanau ā lātou tusi e matamata ai ‘aemaise pe ‘ā fai ua fa’aopoopo ‘iai ni tala ma



ni ata fou. Fa'aavanoaina ni taimi e fa'asoa ai ma talatalanoa ai i tamaiti 'e uiga i ā lātou tusi portfolios. 'Ia fa'ailoa atu nei tusi i mātua ma 'āiga.

### Translation

#### Looking through the portfolios

Esther shows such great excitement looking through her portfolio. She happily turns the page and sees her photos. She points to each photo and says, "That's me." Children gather around to see. At first she is happy to share, then wants to have it to herself, so she moves the portfolio onto her lap. One child climbs over the table still wanting to see. Esther drags her portfolio well away from all and sits on the floor. Some children are given their portfolios. Esther asks if she could take the photos to her mummy. "You can take the whole portfolio to your mummy," the writer tells her.

#### What learning took place?

Esther shows great eagerness in seeing photos and stories of her engagement in daily activities. She takes her time examining each photo before she spots herself then says out loud, "It's me." She is willing to share and talk to others about her portfolio.

Esther sees people, places and things that are familiar. The portfolio creates a lot of communication amongst the children. She has taken ownership of something that belongs to her and asks to take the photos home to Mummy. It shows excitement and enthusiasm as an impact of revisiting and reflecting on previous work, and strongly affirms how a photo or picture tells a thousand stories.

#### What's happening here?

Esther is looking through her portfolio at her early childhood centre, and a visiting professional development adviser writes a story to add to the portfolio. This story is based on the adviser's observations of Esther's experience of revisiting past activities.

#### What does this assessment tell us about the learning (using an Exploration/Mana Aotūroa lens)?

Esther is revisiting the stories that have been written about her engagement in daily activities. She talks to others about the photographs. Esther's review of her portfolio is helping her develop a working theory about the social world of the centre and her place in it.

#### How might this documented assessment contribute to Exploration/Mana Aotūroa?

Esther herself suggests that the photos should be shared with home, and the family and whānau can therefore revisit the stories and photos, continuing the dialogue about what is happening and remembering events.

#### What other strands of Te Whāriki are exemplified here?

The study of Esther's portfolio generates a lot of *communication* among the children, and Esther's feeling of ownership can be seen as a feature of the Belonging/Mana Whenua strand.



## Reflective questions

## He pātai hei whakaaro iho

How do documented assessments contribute to the way children in this early childhood setting explore things and ideas?

Whose knowledge is valued in assessments? Do the assessments represent funds of knowledge<sup>19</sup> from home and local communities?

Do documented assessments provide staff and children with topics that the children want to explore? Are these assessments followed up? Do collections of assessments provide a picture of continuity of exploration?

Do families and whānau contribute to assessments to give teachers information about the knowledge that they value?

Do assessments demonstrate exploration with the body as well as with the mind?

Do documented assessments record perseverance in spite of failure?

## Endnotes

## Kōrero tāpiri

- <sup>1</sup> Media statement from New Zealand-born winner of the 2000 Nobel Prize for Chemistry, Professor Alan MacDiarmid, Foundation for Research Science and Technology, New Zealand, 18 May 2005.
- <sup>2</sup> Early Childhood Learning and Assessment Exemplar Project Advisory Committee and Co-ordinators, 2002.
- <sup>3</sup> Dorothy Singer and Jerome Singer (1990). *The House of Make-Believe: Children's Play and the Developing Imagination*. Cambridge, Mass.: Harvard University Press, p. 19. Vivian Gussin Paley's books also offer some wonderful examples of children developing ideas about "what might be" and "what might happen".
- <sup>4</sup> Guy Claxton writes about perseverance in the same way, as part of a discussion about learning power. He describes learning power in terms of "the four Rs": resilience, resourcefulness, reflectiveness, and reciprocity. Perseverance is a feature of resilience. See Guy Claxton (2002). *Building Learning Power*. Bristol: TLO Limited, p. 23.
- <sup>5</sup> P. Black, C. Harrison, C. Lee, B. Marshall, and D. Wiliam (2003). *Assessment for Learning: Putting It into Practice*. Maidenhead, Berks.: Open University Press, p. 46. See also the reference to this text in Book 10 of this series.
- <sup>6</sup> Ministry of Education (1996). *Te Whāriki: He Whāriki Mātauranga mō ngā Mokopuna o Aotearoa/ Early Childhood Curriculum*. Wellington: Learning Media, p. 37.
- <sup>7</sup> *ibid.*, p. 82.
- <sup>8</sup> Mihaly Csikszentmihalyi (1996). *Creativity: Flow and the Psychology of Discovery and Invention*. New York: HarperCollins, p. 361. Earlier in the same book, Csikszentmihalyi, writing about the early years of creative adults, says that "while these people may not have been precocious in their achievements, they seem to have become committed early to the exploration and discovery of some part of their world" (p. 158).
- <sup>9</sup> Brian Sutton-Smith (1997). *The Ambiguity of Play*. Cambridge, Mass.: Harvard University Press, p. 148. In the final pages of this book, Sutton-Smith suggests that three key characteristics of the very young are also features of play and that "play may be ... the best carrier of them and of flexibility" (p. 227), contributing to a capacity for persistence in the face of adversity. The three characteristics he refers to are: persistence in the face of negative feedback, persistence with their own concerns, and reactivity to whatever comes their way (a wide and flexible view about what is relevant) (p. 226).

“It is also very interesting to think of play as a lifelong simulation of the key neonatal characteristics of unrealistic optimism, egocentricity, and reactivity, all of which are guarantors of persistence in the face of adversity” (p. 231). Following this viewpoint, our assessment documentation might work to protect optimism and improvisation, given that an early childhood curriculum will introduce alternative relationships and responsibilities within a community (tempering egocentricity) and may narrow the range of relevant resources and ideas for problem solving.

- <sup>10</sup> Paul Black and Dylan Wiliam (1998). *Inside the Black Box: Raising Standards through Classroom Assessment*. London: School of Education, King’s College, p. 12. (See also Book 10.)
- <sup>11</sup> Jane Gilbert (2005). *Catching the Knowledge Wave? The Knowledge Society and the Future of Education*. Wellington: NZCER.
- <sup>12</sup> *ibid.*, p. 67.
- <sup>13</sup> *ibid.*, p. 77.
- <sup>14</sup> Ministry of Research Science and Technology (1995). *The Interface between Mātauranga Māori and Mainstream Science*. Wellington: Ministry of Research, Science and Technology, p. 5.
- <sup>15</sup> Elizabeth McKinley (1996). “Towards an Indigenous Science Curriculum”. *Research in Science Education*, vol. 26 no. 2, p. 155.
- <sup>16</sup> Geoff Fairfield (1992). *Pigeon Mountain O Huiarangi: The Birth and Death of a Volcano*. Tamaki: Tamaki Estuary Protection Society Inc.
- <sup>17</sup> Linda Tuhiwai Smith (1999). *Decolonising Methodologies: Research and Indigenous Peoples*. Dunedin: University of Otago Press, p. 148.
- <sup>18</sup> Barbara Rogoff (2003). *The Cultural Nature of Human Development*. Oxford: Oxford University Press, pp. 285–301.
- <sup>19</sup> Norma González, Luis Moll, and Cathy Amanti (2005). *Funds of Knowledge: Theorizing Practices in Households, Communities, and Classrooms*. Mahwah, NJ: Lawrence Erlbaum, pp. 280–281.