



# Space & measurement



## Stella's architecture

This assessment example illustrates one way that **Kōwhiri Whakapae** can be used to inform your assessment documentation. You will see connections to Kōwhiri Whakapae, and *Te Whāriki* highlighted in the annotations.

### Introduction

**This sequence of three assessments follows four-year-old Stella who attends an education and care centre and is interested in house renovation.**

Stella's parents are both Pākehā/European. The family home is undergoing renovation, and Stella is very interested in the places and things in her house, and their spatial relationships.

Kaiako at Stella's centre have explored the Maths area of Kōwhiri Whakapae: Space and measurement as part of a centre wide focus on maths. Kaiako shared Kōwhiri Whakapae with parents at the centre, and information in Kōwhiri Whakapae helped kaiako and whānau to initially notice the mathematical aspects of Stella's interest.

As the assessments progress, the kaiako use Kōwhiri Whakapae to strengthen their practices in ways that help Stella to expand her knowledge and skills. Stella's drawings provide evidence of her growing understanding in this area of maths.

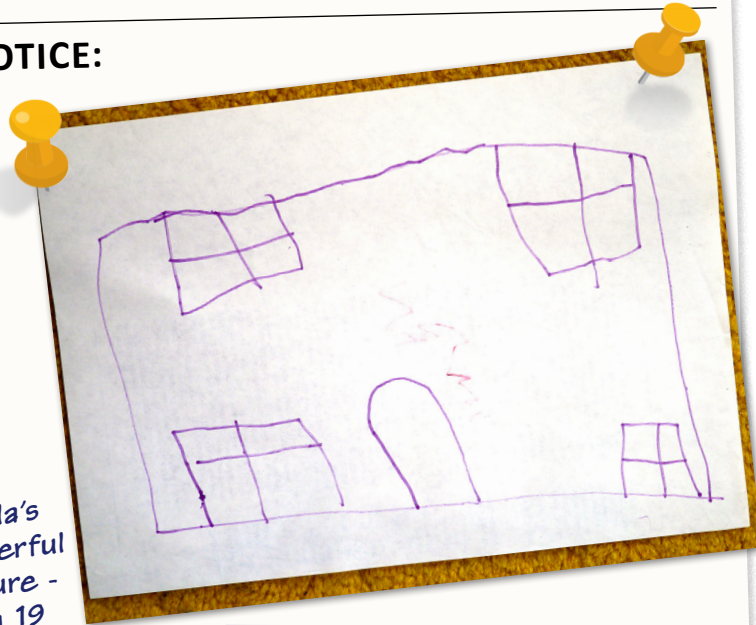
As you read the assessments, an annotation will provide more information about the connections kaiako have made to *Te Whāriki* and how they have used information from the Maths area of Kōwhiri Whakapae: Space and measurement.



# Stella's two-storey house

Collated by Sami  
January 2025

## NOTICE:



Stella's  
wonderful  
picture -  
Jan 19

## Te Whāriki & Kōwhiri Whakapae links

In this series of assessments, kaiako and whānau use sticky notes to write anecdotes. They collect sticky notes on the wall for each child and when a 'thread' or interest emerges, relevant notes are transferred to a separate page and new notes added. This is an example of a separate page that captures Stella's interest in the layout of her two-storey house.

Kaiako have photographed Stella's drawing and stuck a small image of it alongside the sticky notes.

Keeping the notes visible helps kaiako and whānau to share information and respond to children learning.

## Notice

Jan 19 note: Sami notices the importance of the drawing and house renovation for Stella and made sure to talk with whānau at the end of the day.

The Jan 19 and 23 notes illustrate that Stella understands the concepts of above/below and different levels in a house.

Jan 19. 2025 - Sami  
Stella showed me the picture she worked on first thing this morning and told me that her house is going to be renovated! I asked more about her picture. She said: "It has 2 storeys. There are the top windows and that's the door on the bottom floor"

Jan 19 - Sami

Stella & I showed Ana the picture. Ana said the builders start next week. Whānau have been looking at / discussing the architect plans a lot. Stella's interested in the way the 2D plans show the rooms and points to the plans & names rooms at home. Ana said that she's been quite focussed on what's located next to what.

- End of day conversation: Ana (mum), Sami (kaiako) & Stella

Jan 23 - Tama (kaiako).

I saw these notes and looked at the original picture with Stella. I asked "what's behind the door?" Stella: "My bedroom's at the top and the kitchen's at the bottom. The kitchen's got a stove". Great drawing Stella, your bedroom window looks high up!

## RECOGNISE:

*Stella is interested in the spaces in her house - and how they will change soon! She seems particularly interested in exploring 'space and location' in relation to her house by looking and talking about architect plans at home and drawing and discussing her drawing at the centre.*

*Stella's interest provides opportunities for her to expand her knowledge of concepts and language related to shape, size, location, distance, and spatial visualisation (Kōwhiri Whakapae).*

*Te Whāriki*

*Supporting this learning will help Stella to "... become increasingly capable of recognising mathematical concepts and using them with enjoyment and purpose" (Learning Outcome from Te Whāriki strand: Mana reo | Communication).*

## RESPOND:

*We will help Stella to expand her knowledge of space and measurement by:*

- *Highlighting spatial features within stories and everyday experiences. E.g. "She's underneath, I wonder what she can see from there?"*
- *Expanding the range of open-ended materials in the block area that Stella can use to possibly create and 'fill' 3D buildings (and further explore spatial relationships). E.g. different sized tiles, stones, dolls house furniture, small pieces of fabric.*
- *Using descriptive and positional language in conversations with Stella, including about her drawings.*
- *Continuing to learn more from Stella and her whānau about what she already knows and her experiences of these maths concepts.*

*Ana, we have been guided by information from you and from Kōwhiri Whakapae when developing these teaching strategies. Please feel free to share any further ideas with us :)*

## Recognise

Information from Kōwhiri Whakapae (Space and Measurement) has helped kaiako to recognise mathematical aspects of Stella's interest. Rather than beginning by focusing on Stella's level of progress, kaiako have decided to share with whānau general information about the maths area: Space and Measurement. They have also linked Stella's learning to *Te Whāriki*.

## Respond

Kaiako have used information from family, and from Kōwhiri Whakapae 'Lay the Groundwork' practices to help them respond to Stella's growing interest, including the mathematical aspects. For example, 'Lay the Groundwork' practices include suggestions to:

- Highlight spatial situations within stories, songs, games or daily routines and encourage children to notice different perspectives of movement and location.
- As a team, discuss ways to incorporate descriptive language or gesture to identify and model spatial features and positional language.



# Exploring space and measurement

Collated by Sami  
February – March 2025

## NOTICE:

10 Feb -  
"The chimney's  
high on the roof"

5 Feb

Stella talked about her house renovation at morning tea. She said the chimney would stay. I said, "I wonder how the chimney gets to the fireplace". Stella looked like she was thinking about this but didn't say anything. Teri (child) said her apartment didn't have a chimney - but a heat pump was high up and a 'blowing thing' was stuck on the balcony. – Niki

10 Feb - Sami

"I wonder what you can see from your bedroom - can you see the chimney on top of the roof? Stella: "No, I can only see it outside but it starts in the kitchen. I can see the street outside. The bathroom's across the hall from my room - it's next to my room."

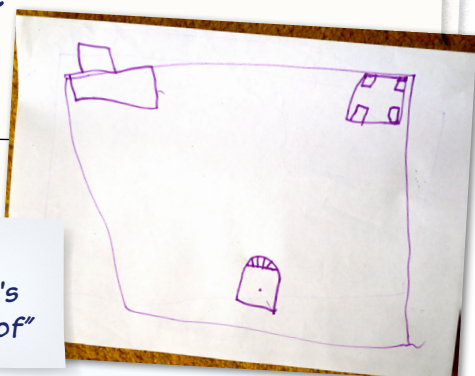
13 Feb - Stella's interested in the chimney - particularly how it gets from the kitchen to the roof, which isn't visible from inside. – Ana

4 March

Niki and I took 8 older children on a walk around local streets. We looked carefully at houses. Andy: "that one's got a garage underneath the house, but that one's garage is stuck on the side." Stella: "I can see in the windows... that's a bedroom and the TV room is next to it - across the hallway"

– Sami

25 Feb - Stella used blocks to create lots of little rooms (flat on the floor). She used shells and tiles to make a bed in one, a bath in another, and one with an oven and kitchen table. She had trouble fitting all the things in the kitchen and needed to make it bigger. "The bathroom's next to my room ... it's got a hot and cold tap" – Tama



## Te Whāriki & Kōwhiri Whakapae links

### Notice

The two drawings illustrate Stella's growing ability to use art to both represent her thinking and further explore ideas. Several of the notes also capture Stella's voice in different contexts (conversation about her picture, home renovation, and on the walk).

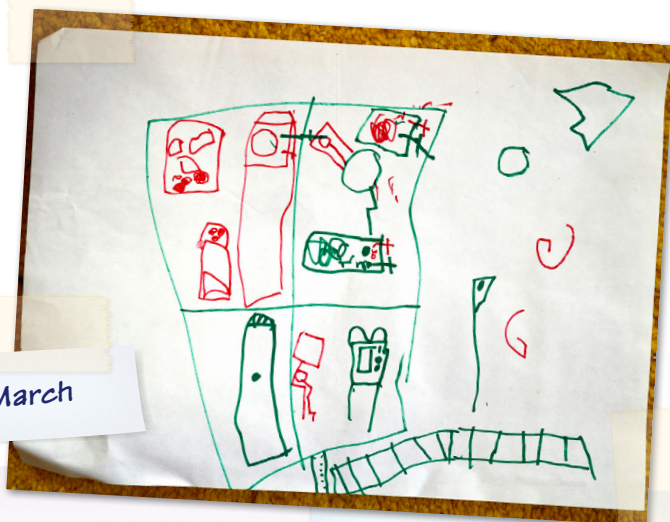
In some notes, kaiako also make their teaching practices visible, including strategies identified in the previous plan. For example:

- 5 and 10 Feb use descriptive and positional language, and 'wondering' questions.
- 25 Feb and 4 March suggest updated block area and describe local walks.

Two of the notes are written by whānau (Ana's). Sticky notes and pictures build an ever changing collection that makes it easy for people to contribute.



7 March



11 March

Tell me about your picture! Stella: "The hot tap is red - the crosses are taps. That's the bath and that's the sink. I'm in bed and that's my bookshelf. There's an arch at the top of our door and a path outside"

- Sami

12 March.

What an amazing picture Stella. I love that you've created icons for the hot and cold taps on the bath and sink! You've positioned the bathroom just right - next to your bedroom.

- Ana

## RECOGNISE:

*Stella's pictures, constructions and conversations illustrate her growing ability to understand and communicate ideas about the relative position of spaces and items in her home. She is also solving problems related to measurement (such as enlarging her 'block' kitchen to fit all the items inside) and grappling with problems of position and connections (where does that chimney go?!). Her knowledge about spatial concepts is expanding rapidly :)*

*Information from Kōwhiri Whakapae (Space and measurement) suggests that Stella's current capabilities sit within the phase Te Ao Mārama.*

*Te Whāriki: Stella is increasingly recognising mathematical concepts and using them with enjoyment and purpose (Learning Outcome from Te Whāriki strand: Mana reo | Communication).*

## Recognise

The kaiako looked at the phases of progress (step 2) in Kōwhiri Whakapae - Space and measurement. Using the drawings and sticky notes as evidence, they decided that Stella's current capabilities sit within Te Ao Mārama.

Kaiako have also linked Stella's progress to *Te Whāriki* learning outcomes from the Mana reo | Communication strand.

## RESPOND:

*We plan to support Stella's learning by:*

- Continuing to wonder aloud with her about relative positions from different perspectives, e.g. "I wonder what you see when you open the front door?"*
- Introducing architectural drawings and photos to the centre to provoke further exploration, and more discussion with friends about relative location, shape and use of icons.*
- Modelling ways to describe the features of shapes, relative size / location, e.g. "I have a very small round kitchen table that's next to my window. My window is in a wall opposite the sink."*
- Providing lots of opportunities for Stella to draw and talk about her drawings, including with other children.*

*Ana, we have been guided by Kōwhiri Whakapae 'Te Ao Mārama' teaching practices when developing this plan. Please share any thoughts or further ideas with us :)*

## Respond

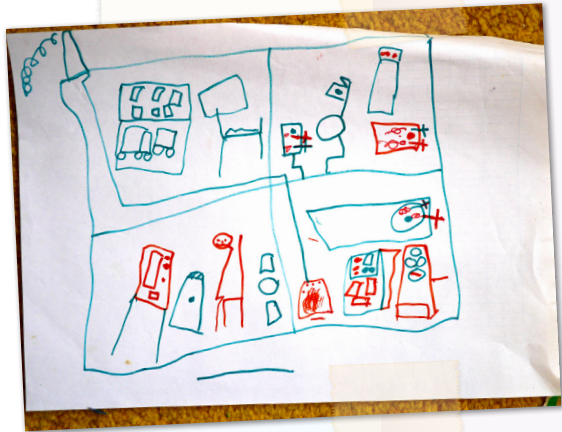
Kaiako then use the supporting practices for Te Ao Mārama to help them decide ways to support Stella to further expand her knowledge and skills. E.g. "encourage children's interest in problems of space or location ... use wondering comments and questions to encourage them to plan, predict, communicate and test their ideas (working theories)..."

# Beds, taps and chimneys!

Collated by Sami  
March - April 2025

## NOTICE:

17 March - Stella's drawing shows us what's behind the 'curvy' front door: "It's the lounge (bottom left) There's a tv and big chair. The tv's got pointy edges. That's me watching tv". Stella's also drawn the long kitchen sink, kitchen table and fire place. "Our table's long - it's a rectangle shape.



Kōwhiri Whakapae notes that "When children create drawings or constructions, they are both representing their thinking and using it for further explorations".

Those are the sink taps and there are drawers with compartments. Those 3 compartments are smaller [I'd asked Stella about the different sizes]. And this is the woodburner. The chimney goes up and along to the outside." the upstairs bathroom has a toilet." - Niki-

Later Stella shows Andy and explains:: "I've put three beds in my room - that's mum and dad in one bed, that's my sister and me, and that's my little brother." - Sami -

Ana,  
19 March:

We've been trying to use more maths language at home to describe shapes and positions - its been a fun focus and she's particularly enjoying differentiating rectangles and squares, and finding curves. Stella's also interested in the compartments in the kitchen drawers and often reorganises the cutlery. She and her sister have been talking about how many people could fit in big or small beds- its so lovely that she's drawn us all sleeping in her bedroom (fantasy come true!)

## Te Whāriki & Kōwhiri Whakapae links

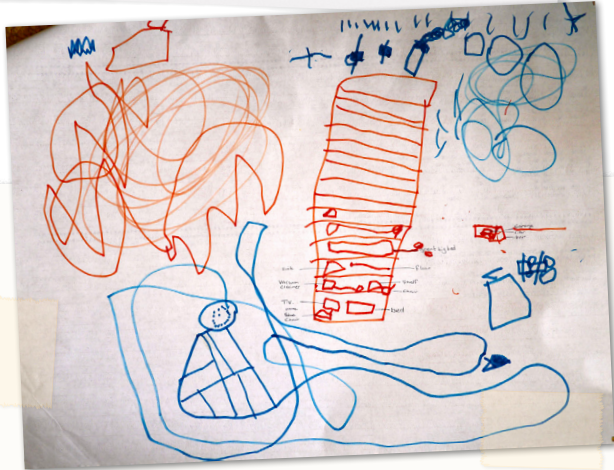
### Notice

The 17 March drawing and verbal description, and 19 March whānau comments provide evidence of Stella's expanding knowledge. Stella can identify and describe differences and similarities in shapes and objects, and compare features of shapes.



20 March

I saw you building with Andy today Stella. You said you were making your dream house! Andy was keen to have a garage for cars. I wonder what you'll have in your house and where it will all go? – Jen



26 March

Stella and Andy's dream house! Stella: "This is all the places - there's a bed and tv at the bottom, and the vacuum cleaner, and it's got a great big bed". Andy: "That's the garage with the car and a garage door. We're going to fill in all the other things later" Stella: "its got a chimney at the very top. Yeah, we're going to fill lots of layers". – Sami

31 March - Mat-time today - we introduced some architect plans to a small group. Stella helped explain the icons (e.g. tap, sink, toilet) and the idea of a cross-section "it's what you see if you cut the front off a building". We asked her to share her picture (17 Mar) to illustrate. Stella was wonderful - she explained the location of various rooms and items (all three beds) and answered children's questions. We couldn't get it all down - will make a recording next time! – Niki

Ana. 2 April: It's great to see Andy and Stella working together - their friendship seems to have flourished over this shared interest. Stella's been talking about their 'dream house' at home. Great to also hear that Stella is confidently sharing her ideas in a group situation - this seems to be another new step!

31 March note shows that Stella is working in a sustained way on a shared interest with a friend. The kaiako think this is new for Stella, and Ana's whānau note (2 April) supports this view. Similarly, the 31 March suggests that Stella is developing more confidence to share her ideas with others in group situations.

Again, kaiako make their teaching practices visible in some notes (e.g. 20 and 31 March).

## RECOGNISE:

*Stella's current maths capabilities are continuing to expand within Te Ao Mārama phase (Kōwhiri Whakapae). For example, Stella's drawings illustrate her growing ability to identify and describe differences and similarities in shapes and objects such as straight or curved. She is also using mathematical language to compare features of shapes, e.g. bigger, more pointy.*

*As well as communicating location/ position through her drawings, Stella is also collaborating with Andy to explore and test their ideas. As you note Ana, this is a big step for Stella who often enjoys constructing and drawing on her own. She also seems to have developed more confidence to share her ideas with others in group situations. Stellar work Stella!*

*Te Whāriki: Stella continues to expand her understanding of mathematical symbols and concepts and using these with enjoyment and purpose (Learning outcome from Te Whāriki strand: Mana reo | Communication). She is also becoming increasingly capable of expressing her feelings and ideas using a wide range of materials and modes | he kōrero auaha. (Learning outcome from Te Whāriki strand: Mana reo | Communication).*

*Stella has a positive attitude to maths, confident that she can use it in meaningful ways that reflects her interests. Stella's knowledge and growing maths capabilities will help her to continue to learn about measurement and geometry in the Mathematics and Statistics learning area of the updated New Zealand Curriculum.*

## Recognise

Kaiako returned to the phases of progress in Kōwhiri Whakapae. Using the drawings and sticky notes as evidence, they decided that Stella's current maths capabilities are expanding within Te Ao Mārama phase. They make visible the link between Stella's progress and an additional learning outcome from the Mana reo | Communication strand (Te Whāriki).

Kaiako also recognise the importance of Stella's growing social competence and decide to focus on supporting this learning as well.

## RESPOND:

*We will support Stella's learning by:*

- Encouraging playful exploration and conversations between Stella and Andy, particularly during kai times when they tend to eat together, and after rest-time when they often play together.*
- Adding different shaped perspex pieces to the block area to support exploration of layering (two storeys). Use these materials to create provocations that encourage Stella & Andy to generate and refine working theories about construction - including shape, size, measurement, relative positions etc.*
- Creating more opportunities for Stella (and other children) to share their ideas / constructions/ drawings with others in group situations. Perhaps use the data projector to enlarge images of pictures and constructions?*

*Hi Ana, as discussed yesterday we have drawn on Kōwhiri Whakapae 'Te Ao Mārama' practices as well as ideas to support Stella's growing social and emotional learning to develop this plan. Any further ideas are most welcome :)*

## Respond

Kaiako use the supporting practices in Kōwhiri Whakapae to encourage Stella to continue growing her knowledge and skills in the area of maths.

Kaiako use their own knowledge of social and emotional learning (SEL) to plan ways to support Stella's increasing social confidence. They know that they can also delve into the SEL area of Kōwhiri Whakapae for further help.

## Revisit

After implementing this plan over the next month, kaiako and Stella's whānau see her maths capabilities continue to grow. They decide to revisit this aspect of Stella's learning in six months' time.

In addition, kaiako revisit how effective their implementation of Kōwhiri Whakapae: Space and Measurement 'Lay the Groundwork' practices have been for all children's learning. As part of this evaluation, they draw on Stella's assessment documentation.