Playing with repeated patterns

Child: Jessica **Teacher: Anne** **Date: 29 April – 16 May**

Jessica began sketching with enthusiasm, and with great experimentation. She played with the koru pattern by connecting it in an interesting way. She even added spirals in the writing of her name.

Her sketching also includes pictures that have meaning for her, i.e., a person and a house. Her black and white painting is a reflection of her sketch, as is her final PVA picture.

A few days later her mother showed me a fascinating drawing that Jessica had worked on at home. I looked at the series of photograph frames. "Look, these make them stand up" (she pointed to the stands) "and this is one person," said Jessica.

Short-term review

Jessica is observant and creative. She loves to draw and focuses on detail. I remember showing her how the koru patterns were repeated and we discussed this. One can only wonder if she is experimenting further with repeating a pattern in this very mathematical drawing.

What's happening here?

This exemplar summarises some of the work in Jessica's folder as she experiments with patterns, inspired by a visit to the Māori Gallery at Auckland Museum. During this visit, the children observed and drew the patterns, including the kōwhaiwhai. Not all Jessica's artwork is included here, only the drawing that came from home and some of the koru pattern drawings.

What aspects of noticing, recognising, and responding to mathematics learning does this assessment exemplify?

This drawing was done at home, but her mother recognised its connection with the artwork of patterns and people that Jessica had been exploring at the early childhood centre. The teacher adds the home drawing to Jessica's folder, and she comments on the development of her artwork over time. She also acknowledges the uncertainty of her analysis: "One can only wonder if she is experimenting further with repeating a pattern …" Jessica's voice is here too. She explains that she has drawn stands on the photograph frames. "Look, these make them stand up …"

What does this assessment tell us about mathematics learning (using a *Te Whāriki* lens)?

In *Te Whāriki*, outcomes are summarised as working theories and learning dispositions. In terms of learning dispositions, the teacher comments that Jessica is "observant" and "creative". Jessica is also exploring a working theory about patterning, in a range of contexts. A principle in *Te Whāriki* is that the wider world of family and community is an integral part of the early childhood curriculum. There is a family contribution to Jessica's work, and her exploration of pattern has been inspired by a visit to the local museum. Her mathematics understanding is becoming connected to a greater diversity of purposes, places, and social communities (see page 5).

How does this assessment exemplify developing competence with mathematics?

Jessica has been playing with connected patterns, and her drawing is one example of this interest. The teacher points out the mathematics in her analysis of the drawing: she records that she and Jessica have discussed koru patterns and implies that Jessica has been motivated by her observations and these discussions; she sees connections with Jessica's other work on repeated patterns. *The New Zealand Curriculum* states that algebra "involves generalising and representing the patterns and relationships found in numbers, shapes, and measures".[26] Jessica's repeated and sequential pattern displays a "rule" or a relationship: as the figures get smaller, the legs get longer. Such "rules" are part of explaining, one of the six activities identified by Bishop that are responsible for the development of mathematical ideas in any culture.[27]