

Growing islands of interest: nurturing the development of young children's working theories.

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Abstract

This presentation draws on the work from a 2-year collaborative practitioner research project, *Moments of wonder, every day events: how are young children theorising and making sense of their world*. The project aimed to contribute perspectives to the discussion around the ways young children express and develop working theories, how practitioners understand these and how best to respond to this learning in five Playcentres (parent-led early childhood education settings) in Canterbury, New Zealand.

Children's working theories, as described in *Te Whāriki* (the New Zealand early childhood education curriculum), are derived from Claxton's view that knowledge consists of a large number of purpose-built situation specific packages called 'mini theories', and that 'learning involved a gradual process of editing these mini theories so that they come to contain better knowledge and skill and be better located with respect to the area of experience for which they are suitable'.¹ When children are engaged with others in complex thinking they are forming and strengthening their working theories.

In exploring working theories we recognise that children have many interests. Some of these are fleeting, while others are more connected or revisited more frequently by children. Over the course of our research, we have come to think of these interests as 'islands' and in doing so have adopted this as a metaphor for working theories. We were keen to see how we can grow some of these islands of interest: making them more complex, more connected, and more compelling to children.

The research team explored the different ways opportunities can be created for children to express and develop working theories and the outcomes for children's learning as a result. The presentation will focus on some of the strategies implemented and the ways these have contributed to children's 'working theories' learning as the practitioner researchers attempted to build communities of thinkers and 'wonderers'.

Key words: working theories, islands of interest and expertise, attunement, intentionality, curious, creative.

1. Introduction

The inspiration for this paper is drawn from a 2-year collaborative practitioner research project, *Moments of wonder, everyday events: how are young children theorising and making sense of their world*. This Teaching and Learning Research Initiative project aimed to contribute perspectives to the discussion around the ways young children express and develop working theories, how practitioners understand these and how best to respond to this learning. The project was based in five Playcentre settings in Canterbury, New Zealand. This paper focuses on the ways adults can create environments that compel, enable and encourage curiosity and wonderment in young children as adults become attuned, intentional, creative and curious about how to ‘grow’ what we came to think of as children’s ‘islands’ of interest and expertise.

2. Working theories as worthwhile learning outcomes

The focus on working theories as a learning outcome is drawn from the New Zealand early childhood education curriculum, *Te Whāriki*. *Te Whāriki* describes valued learning outcomes for young children as knowledge, skills and attitudes that combine as learning dispositions and working theories.² The term ‘working theories’ implies fluidity and the sense of an idea that is being developed or worked on. This sits well with the view of knowledge as partial and truths as situated.³ We came to think of learning dispositions and working theories as two sides of the same coin; they are both about the “what” and “how” of learning. Learning dispositions or habits don’t exist in isolation rather they are attached to or situated in children’s interests, experiences and perspectives in and of their worlds. As greater emphasis is put on the processes of ‘knowing’,⁴ creativity,^{5 6} and learning habits or dispositions,^{7 8 9 10} we were keen to explore the space where these worthwhile learning outcomes are situated for children, together with ways that adults can encourage the development of children’s working theories.

The *Te Whāriki* notion of ‘working theories’ is derived from Claxton’s view that knowledge consists of a large number of purpose-built situation specific packages called ‘mini theories’, and that these mini theories are gradually edited so that they ‘come to contain better knowledge and skill and be better located with respect to the area of experience for which they are suitable’.¹¹ Elsewhere we have explained how Claxton’s three simple analogies to describe mini theories – islands, amoebae and computer files were useful to construct what we were noticing about the development of children’s working theories¹². We found that working theories develop and morph as a child’s knowledge of the world, skills and strategies, attitudes and expectations, change through experience. This seemed to fit most closely with Claxton’s island analogy. Claxton refers to what we know as being like islands in a sea of what we don’t know.¹³ When we experience something new we are either ‘on firm ground’, because we relate it easily to what we know – our

island of knowledge – or we are ‘at sea’ and are uncertain and unsure how to interpret this experience or how to behave. Islands may eventually connect as we come to realise they are not dissimilar. Likewise, what was once thought of as one island could, with greater experience, become two.

For young children what they find interesting, or are interested in, is often a powerful motivator for learning.¹⁴ In the New Zealand context early childhood education settings are charged with taking notice of, and fostering young children’s interests as a means of enhancing the ‘worthwhileness’ of their learning experiences.¹⁵ We recognise that children find many things interesting and have many interests. Some of these are fleeting, while others are more connected or revisited more frequently by children and are rich in meaning for children.¹⁶ We adapted Claxton’s island analogy to create a metaphor for working theories that reflected sustained interest, and called these *islands of interest*. Over the course of our research, we found interest, combined with the right teaching strategies proved to be a springboard for intense and complex learning by young children and adults alike. Our data resonated with Crowley and Jacobs’ view that knowledge deepens and becomes more complex over time as children find and develop areas of interest that through interactions and engagement with people and resources can become *islands of expertise*.¹⁷ We also found that both *islands of interests and expertise* proved to be particularly rich sites for the development of learning dispositions or habits.

3. ‘Growing’ islands of interest and expertise

We were keen to see how adults can help to grow some of these islands of interest: making them more complex, more connected, and more compelling to children. Adults in our study discovered the importance of particular ways of ‘being’ and interacting with children in order to achieve intersubjectivity, or the kind of mutual understanding necessary for the co-construction of learning was a key part of this process.¹⁸ To achieve this adults needed to be attuned to the many ways children expressed their working theories and respond in intentional ways to children’s wonderings, ideas, curiosities and expressions. This created particular kinds of environments where adults had to be curious and creative too and confident in their identities as both teachers and learners.

Attunement and intentionality

Careful questioning, observation and analysis revealed many of the subtle nuances of interactions between children and adults in the study. Perhaps one of the most important lessons learnt about how to achieve this goal. Intersubjectivity and foster working theories was through adults slowing down and really listening to children, not to the surface topic but to the deeper meanings. Educators in our study began to consciously wait as they worked with children, to listen more closely to both their words and intentions. This focus on intersubjectivity resonated with Siraj-Blachford’s use of the term ‘sustained shared thinking’ to define ‘instances where two or more individuals ‘work together’ in an intellectual way to

solve a problem, clarify a concept, evaluate activities or extend a narrative'.¹⁹ The Effective Provision of Pre-School Services (EPPE) project in the UK noted how few opportunities there were for children to engage in these important opportunities for complex thinking.^{20 21} In our study we found this was a competency that takes time and practice to master. In this example, Kristina, a practitioner researcher, intentionally strives to understand four-year-old Phoebe's ideas about how bees make honey:

P – It [a bee] goes in and out, in and out to get all of the honey from all of the flowers and the bees never get tired.

K – They just keep making honey?

P – Yep.

K – So you're telling me that the bees don't sleep?

P – They do... only at night. The mummy does nothing but help the babies.

K – Does she have babies all the time?

P – Then she has kids.

K – So when those baby bees grow up what do they do?

P – They help their Dad out with... get the honey...

K – They help their Dad make the honey?

P – ...and GET the honey.

K – Do you mean from the machine? [Previously Phoebe described a machine that makes honey that is inside a bee hive.]

P – No, from the flower.

K – So do you get honey from flowers?

P – No honey is... the bees get the honey from the flowers.

Kristina and Phoebe go and get a flower. Phoebe points right into the flower and says:

P – Nectar is pollen. It is in the middle of the flower. The straight things there is honey [stamen]. People get honey from bees, people put honey in jars.

At first, conversations like this could seem a little stilted as children and adults learnt the skills needed to sustain their interactions and as children learnt to trust that adults were genuinely interested in their theories and opinions. Claxton also reflects that using a new repertoire of strategies can feel 'clunky' in the beginning. We certainly found this to be so.²² Some practitioner researchers, like Eleanor, intentionally tried to understand children's explanations while at the same time they tried to improve the ways they talked with children about their ideas. For Eleanor this involved lots of audio recording of her interactions so that these could be revisited and reflected upon. As well as taking time for the practitioners to develop these skills it also took time to bring the other adults working in the centre on board with these new ways of listening to children and attempting to share the power in a conversation more evenly.

A key theme underlying attunement and intentionality is the adult's willingness to develop shared meanings with a view to encouraging the growth of *islands of interest*. Nevertheless, even when adopting Shafer's view that teaching is mostly listening, and learning is mostly telling, adults don't always achieve intersubjectivity as some interpretation is required from observed behaviours and language to try and determine what the child is thinking.²³ Our data provides examples of how well meaning adults can 'highjack' the direction and close down or divert the children's exploration.²⁴ Even very attuned intentional adults get it wrong. In another example Eleanor responded to Ferdi's long held interest in Harry Potter by holding a 'Wizard Day' at Playcentre. Eleanor and the other adults wanted to acknowledge and extend Ferdi's interest and also give other children the opportunity to explore the idea of wizards too and hopefully connect with his interest. However, this initiation by the adults did not have the desired effect as although other children explored ideas about potions, spells and whether wizards can fly (eventually comparing a wizard glide to a fairy flutter), Ferdi's participation was fairly limited. Eleanor later reflected that she had sidelined Ferdi's interest in the world of Harry Potter:

But instead of trying to talk to Ferdi and find out what he thought about Harry Potter we tried to widen the interest into 'wizards' to be something more children could potentially hook into.

So, I think I wasn't really interested in what Ferdi was interested in and his working theories as much as I was interested in trying to help him interact with the other children more positively.

Now I think this was probably quite patronizing but maybe something that more people than I do. Anyway, I wish I had just spent more time talking to him about Harry Potter and allowing myself to be genuinely interested instead of pursuing my own agenda. (June, 2010)

Some time later when Eleanor had had time to revisit Ferdi's interests she recognised that the ideas Ferdi's was focused on in the Potter stories revolved mainly around the themes of good and evil, something the 'wizard day' had not touched on. The practitioner researchers like Eleanor found that it is only by trying and trying again that allows you to see when you have missed the mark. The important thing is to avoid inappropriate certainty as that closes down the capacity to attune to different possibilities and interpretations.

Revisiting and provoking children's thinking is also part of being intentional and attuned to possible learning pathways. For example, in one of the research settings, the strategies of using photos and video together with well-placed questioning and genuine listening meant in one of the project settings that one young child's *island of interest* could compel a community of learners to develop an *island of interest* together. In this project, we were frequently reminded of the power of documentation in supporting educators to make meaning of children's

learning, as well as supporting the children's learning. This, together with reflective discussion, is fundamental to any educational setting where adults strive to understand children's learning and put this understanding to good use.²⁵

Adults will be curious and creative too

When educators really seek to understand children's thinking in order to support learning, it changes the power balance because adults become learners too, rather than holders of knowledge. This requires adults to be curious learners, open to creative possibilities and multiple ways of knowing. Many of the children's theories we investigated led us to question our own knowledge and be open to moments of wonder and exploration too. As one practitioner researcher noted, much of what adults accept as fact can be dubious once it comes under scrutiny (e.g., in response to children's many questions and interests, such as why volcanoes erupt and why a see-saw is called a see-saw) and required adults to shift from right-answer-thinking to becoming critical creative theorizers who prioritise rich learning opportunities over simply finding out the answer to a child's query. Parallels can be drawn to Claxton's work on learning habits where emphasis is put on children building rich 'learning power' over thin 'learning power'.²⁶

There is much to learn about how adults can work with children to in ways that encourage creative directions of learning that have meaning to the child, as for many adults who see themselves as 'teachers', their instincts are to lead them to adult-known solution that are frequently less creative than the child's. Shafer commented, 'resisting the temptation to correct a child's misconception, to not 'teach', may be one of the most difficult tendencies we struggle to overcome and one of the most valuable gifts we give children'.²⁷ This idea is something many of the educators in our study considered in light of their involvement in the working theories project. Kristina was taken by four-year old Felix's question about why a see-saw is called a see-saw. Felix offered a complex idea that the see-saw looked both like the 'sea' and a 'saw'; the curved leg of the structure was a wave and the long flat crossbar and seats was a saw. Later Felix used this theory again with a different see-saw that didn't have the wave shaped leg, pointing out an alternative 'sea' explanation drawing a comparison between the handle for the rider, to a submarine's periscope, an idea Kristina herself had, yet again, never considered. Kristina later reflected:

Why it is called a see-saw is not as relevant any more, not now that I recognise it as a theory. In the past I may have chosen to investigate the internet or books with children to find out why it is called a see-saw to show them the answer, now I want to investigate what they think rather than providing them with 'cheap facts' as Shafer says. It's about the journey not the answer. (Discussion notes, 2009)

Similarly, in exploring the children's ideas rather than directing them to particular answers, Eleanor became as curious as them as to the reasons why the boat did not sink:

Barney thought he would make a big boat out of some large cardboard boxes we had at Playcentre. He started by drilling holes in the bottom. Then he got the hammer and was ready to bash some bigger holes in. At that point I noticed him. "What are you doing, Barney?" "Making a boat," he replied. "But what do you think will happen to your boat if you have holes in the bottom?" I asked. Rhetorical question I thought and another other boy, agreed. "It'll sink."

We decided to test it in the water trough but it floated. We tried to push it down but it was really difficult. If we pushed really hard we could make the water squeeze up through the little holes where we were pushing.

In the end, Barney got the hose and started to fill it from the top to sink it. The others seemed to feel that was cheating somewhat and asked him to stop. Jack got the hammer and banged large holes in the box but even with these it was difficult to sink. We were really surprised!

Our theories about floating and sinking were disrupted here – the ones about the materials that float well (cardboard was not on top of my list) and the ones about holes leading to sinking and we are not completely sure why... (Observation and reflection, 2009)

Creating a culture where wondering with children is an everyday practice and way of being where adults allow sufficient wait time and spaces for children's ideas to emerge and *islands of interest* to grow was a goal of the educators in our study. Often this would involve setting up a scenario to help children test or explore their ideas. For example, Kristina provided a photograph of a different type of see-saw to help Felix consider his initial theory, while Nikki (also a practitioner researcher) introduced a child to the idea of making books to capture the child's expertise about Meerkats and Lizards so they could be shared with others. Recording and illustrating these ideas quickly developed into an extensive series of home- and early childhood education centre-made story and chapter books. Over time the child gained agency and became an expert orator, storyteller and illustrator.

In the examples above the adults were genuinely curious about the child's theories and this began to influence children's ways of learning. Interactions between the adults and children became increasingly authentic and mutually satisfying. These adults were comfortable with playing along with children's ideas and more willing to let them test these out in creative ways all the while trying hard not to 'contaminate' these opportunities with their adult irrelevancies.²⁸

Documentation, as a tool for the purpose of revisiting and making working theories public, was used in all of the research centres. When children at Kristina's early childhood centre noticed water dripping from around the makeshift plastic industrial cotton-reel plug of a full water trough, adults knew this was a working theories opportunity. The children's initial solution was to build a 'mile-high' plug by stacking more of the cotton reels on top of the one already being used. This was repeated with multiple adaptations to the design. The adults played along, documenting and tracking the children's ideas and responses to the problem, offering provocation and revisiting the children's ideas over the coming weeks, as it became a communal interest and the 'problem' remained unsolved.

Which working theories to try to grow will be the question of every educator working in this way. Educators in our study found endless examples of possible working theories that emerged during everyday interactions with children. Adults need to decide which of the child's theories to follow more deeply and how they might encourage this to happen. Having a go at defining what the child's theory *might* be and what possible response the child *might* be seeking from adults was helpful in deciding how to respond. In doing so, adults will consider whether these theories are likely to be enduring or fleeting. Sensitivity is important as practitioners decide which theories to develop and which (and when) to let go. In the case of Felix's see-saw theory, Kristina decided not to explore his ideas about seesaws further at this point, as she felt that his current focus was on sharing his ideas rather than exploring the origins of the word see-saw. While it might be tempting to pursue this further, this did not appear to be Felix's interest at this point. The dripping water-trough however, captured the imagination of many members of the learning community over an extended period of time and could easily be recognised as an *island of interest*.

4. Conclusion

Working theories are about thinking and acting in ways that work to express, communicate, develop and strengthen ideas and understandings about the world. Through our research our own developing understanding of working theories has not been limited to particular domains such as scientific thought, rather we have been interested in children's creativity, imaginings, problem seeking and solving, theorising, acting and interactions as they engage in everyday inquiries and conversations with others. Developing a shared language and understanding of working theories, has the potential to create many opportunities for meaningful dialogue about the learning of *all* children.

In each of the research settings the educators aimed to develop a culture of trust between adults and children so that an individual's theories would be taken seriously. As part of this they fostered an environment where thinking is encouraged and it is acceptable to think differently. Provocation, inspiration and collaboration will be common-place in educational settings that value children's working theories as worthwhile learning. Adult-child relationships will also be key and this relies on adults who strive to know the child and know how they do things

in their family, drawing on funds of knowledge from their homes including cultural ways of learning, expression and knowing. Educators like Eleanor, Kristina and Nikki illustrate what is possible but they also highlighted some of the challenges for educators who seek to work in these ways. There is still much to learn about how adults can work with and alongside young children to encourage knowing and knowledge that has high meaning for children, and that will motivate them to engage in complex thinking, theorising and critique that will endure.

Notes

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- ¹² Keryn Davis & Sally Peters, 'Exploring learning in the early years: Working theories, learning dispositions and key competencies.' in *Understanding teaching and learning: Classroom research revisited* ed. Baljit Kaur (Rotterdam, The Netherlands: Sense Publishers, in press 2012), 171-182.
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- ¹⁵ Drummond, *Assessing children's learning*, 13.
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- ²⁵ Drummond, *Assessing children's learning*.
- ²⁶ Claxton, *Can schools prepare you for anything?*
- ²⁷ Shafer, *Ordinary Moments*, 191
- ²⁸ Drummond, *Assessing children's learning*.

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