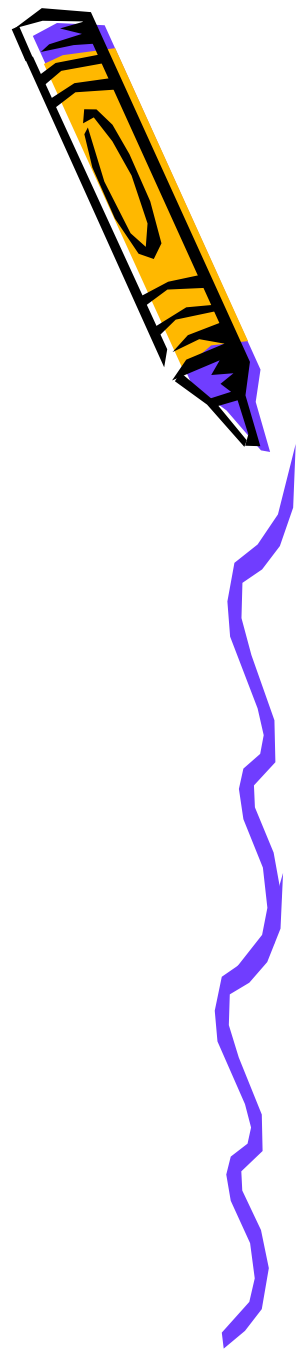


# The child as thinker: Children's working theories

Helen Hedges  
with Maria Cooper and Sarah  
Jones, in partnership with Small  
Kauri ECEC and KiNZ Myers Park  
Early Learning Centre



*Te Whāriki's* two indicative learning outcomes are described as combinations of knowledge, skills and attitudes that integrate as *dispositions and working theories.*



# Children's "working theories"

- second major learning outcome of *Te Whāriki* but little research or professional learning yet.

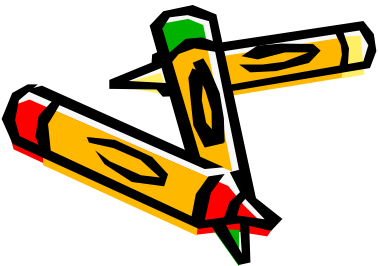
Helen Hedges: "the neglected sibling of the popular big sister, dispositions";

Margaret Carr: "the bossy big sister!"



# Definition (Ministry of Education, 1998)

"a unique system of ideas that is based on a person's experience and provides them with a hypothesis for understanding their world, interpreting their experience, and deciding what to think and how to behave. This system is in a constant state of development and change" (p. 88).



Project on working theories in Playcentres (Davis & Peters, 2010; Peters & Davis, 2011).

- working theories "creative links between existing and new experiences to expand both children's thinking and knowledge to strengthen their understandings of the world".

- children's theorising related to ongoing, deep interests

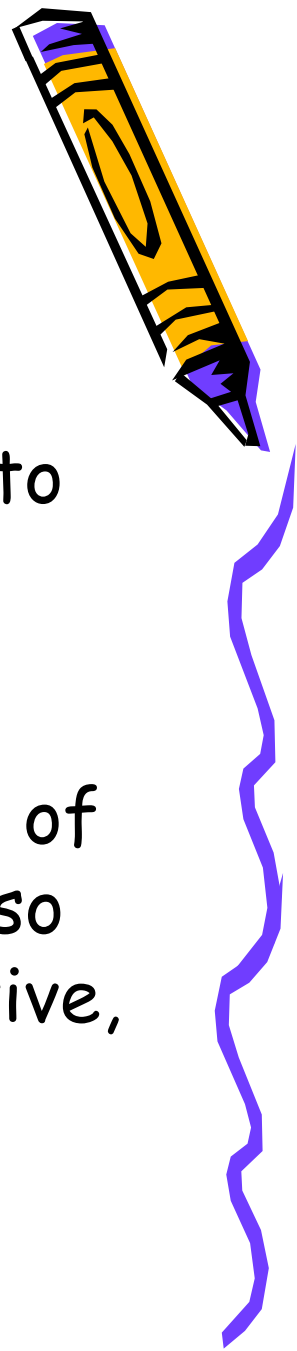
Development of working theories facilitated by opportunities for children to share, test or explore ideas.



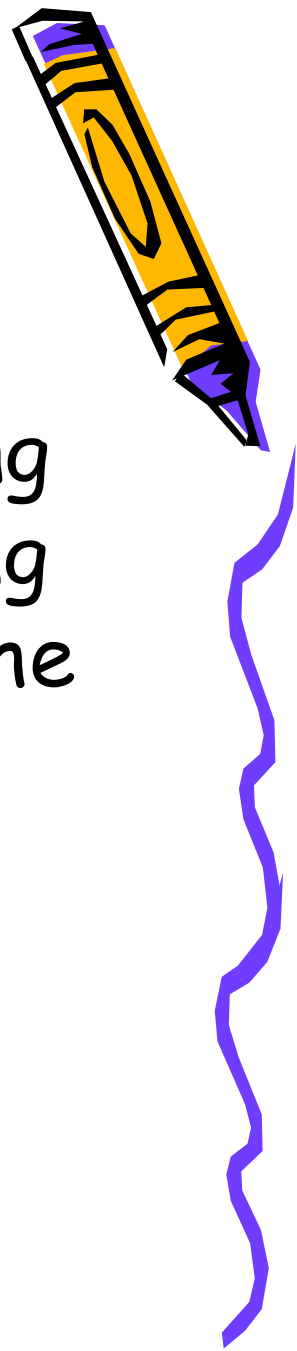
# Claxton's (1990) notion of "minitheories"

Children create minitheories from the knowledge they have so far, and use this to interpret new information and to refine their previous understandings.

Learning can be seen as a gradual process of editing and improving these minitheories so that they become more useful and effective, more comprehensive and appropriate, and more connected together.



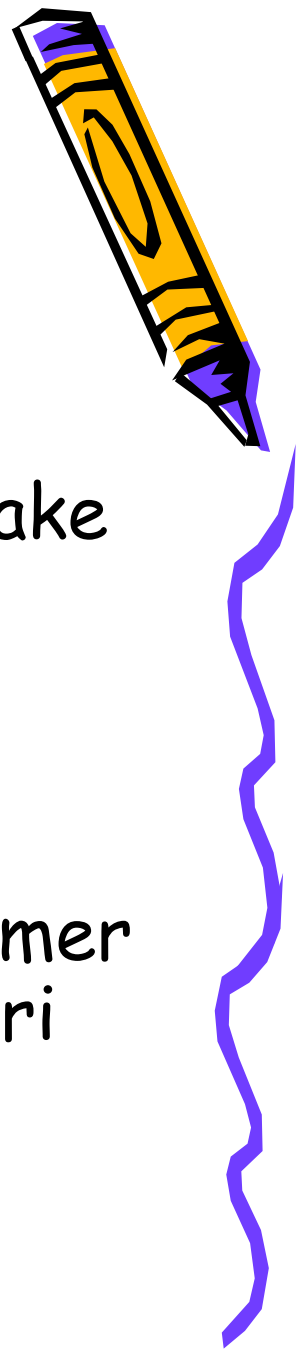
In summary: "Learning at its most general is the business of improving our theories, elaborating and tuning them so that they keep track of the changes in the world and come to serve us ever more successfully" (Claxton, 1990, p. 23).



# Towards a definition ...

Working theories represent the ways children think about, inquire into and make meaning about their worlds as they attempt to make connections between prior and new experiences and understandings.

(working definition of pilot project summer 2010-2011 - partnership with Small Kauri ECEC and KiNZ Myers Park ECEC)





# Teachers "working theories about working theories"

- intuitive understandings, but initially difficulty articulating or defining understandings.

Linda noted:

*... we're always watching their ideas and their thinking and are they not just other names for the idea of theory? You know they are thinking, they start to hypothesise and say "what if such and such?" We just haven't called them theories.*



Kirsten suggested:

*... [the term theory] can be quite daunting I think for people when you think there's a whole lot of research gone into it and you have to back up your ideas quite thoroughly.*



The notion of "snippets" took hold throughout the project and helped teachers to recognise and tell stories of children's learning that they understood as attempts to connect ideas and build knowledge.



Laxmi

*[The children] had said [the plum] was an apple. ... So we went and got a knife, we cut the plum and we found a stone in the middle and then [child] is like to me, "Oh what's inside the stone?" So then I got a hammer and we smashed it and we opened it and we found the little seed and also in the meantime we got an apple from the kitchen and we cut that open and they could see that the plum had a stone and the apple had seeds ....*

Helen

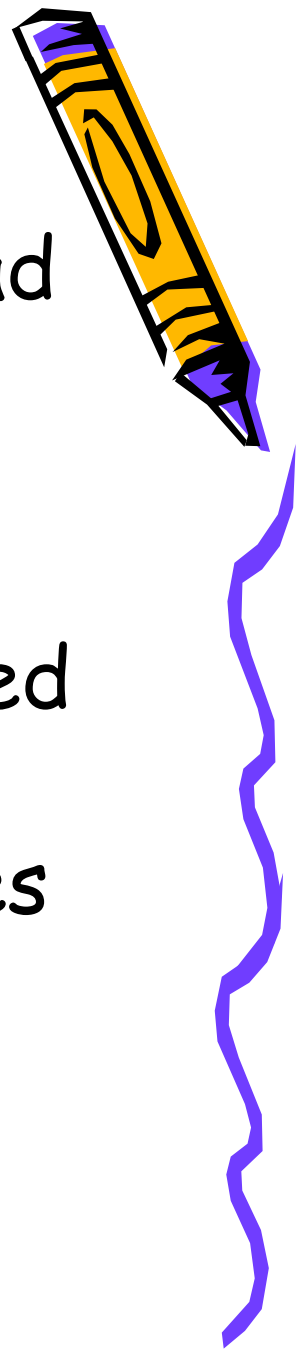
*... What do you think made them think the plum was an apple in the first place?*

Laxmi

*The colour I think, and the fact that it was on a tree. (KiNZ/2/17)*

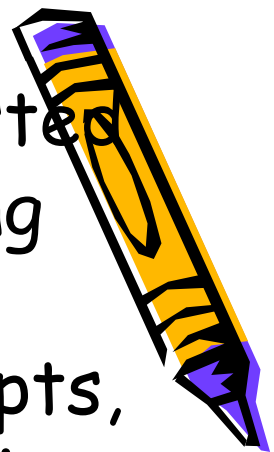


Paulette realised that when she had documented children's learning in relation to dispositions such as curiosity, perseverance and friendship, she might also have used the lens of working theories. - the parallel nature of the two outcomes of *Te Whāriki*



Teachers' initial understandings suggested working theories involved children being curious, wanting to make connections, developing hypotheses, ideas and concepts, and various ideas about children's thinking, reasoning and problem solving. They expressed some difficulties in understanding, labelling and documenting working theories and discussing these with parents.

- first step forward for future research was to develop clearer understandings of the notion itself



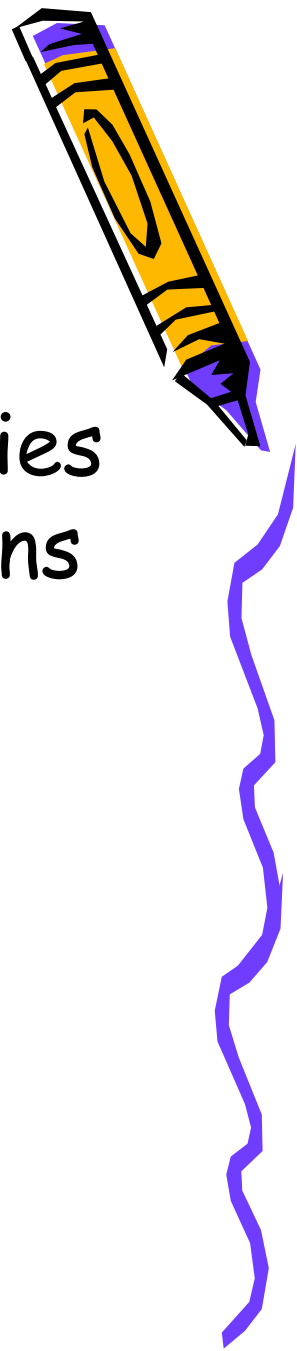
Current definition for our Teaching and Learning Research Initiative argues Claxton's ideas alone insufficient to understand complexities of working theories. Considers sociocultural theories we consider pertinent to developing understandings of the construct.



# Vygotsky (1978, 1986)

Children's early experiences in families and communities form the foundations for later cognitive development.

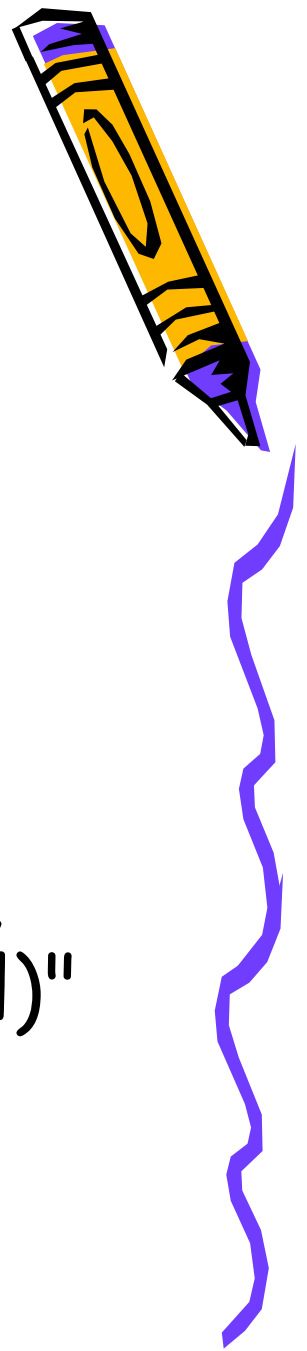
"Everyday" and "scientific"  
understandings





# Principle of holism

Rogoff (1990): three human drives: social, intellectual and expressive.  
Lindfors (1999) suggested three urges combine in inquiry acts: "to connect with others (social), to understand the world (intellectual), to reveal oneself within it (personal)" (p. 46).

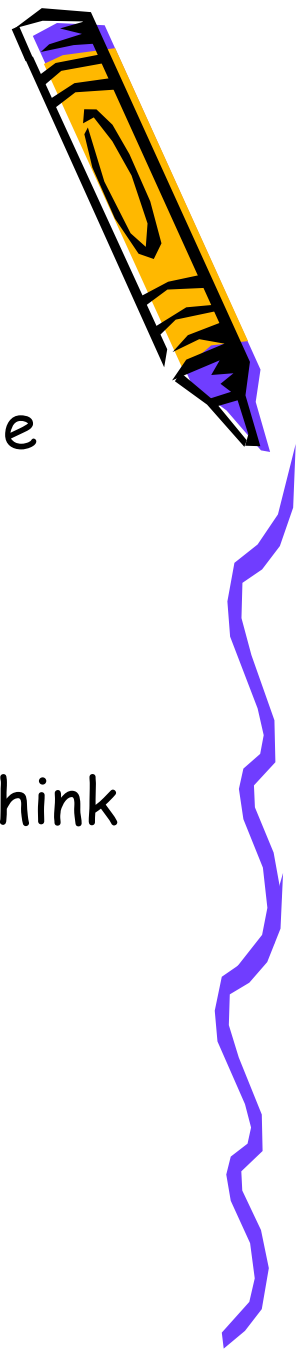


# Lindfors (1999)

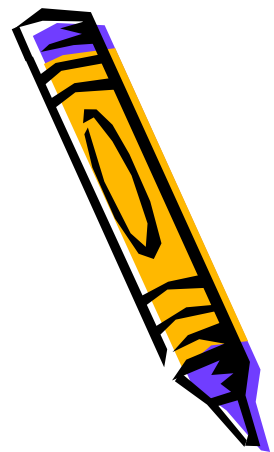
From birth, children develop the ability to engage others in their "inquiry work" (p. 80) as they attempt to make sense of the world.

Children create intentional dialogue and collaboration with others to aid them as they ponder, theorize, puzzle, imagine, consider and think through their ideas and understandings.

Contrasts the role of teacher-as-transmitter of knowledge or teacher-as-questioner with the potential role of teacher-as-inquirer.



# Rogoff, Paradise, Arauz, Correa-Chávez and Angelillo (2003)



Children are highly motivated in their learning by the desire to become active and effective members of families, communities and cultures. They are "born ready to learn the ways of those around them" (p. 67).

Children learn very effectively through "intent participation" actively observing and listening-in as adults carry out everyday tasks and behaviours.



# Wells (1999)

Learning is most effective when it engages with the "real questions" that arise when learners are engaging first-hand with topics and problems that are of genuine interest to them.

Community of inquiry: teacher and learners working collaboratively to construct knowledge in a pervasive spirit of inquiry



# Bereiter (2002)

"Both learning and knowledge building ought to be meaningful" (p. 255)

Educators tend to rely on widely-held "folk theories of mind" (p. ix) that are:

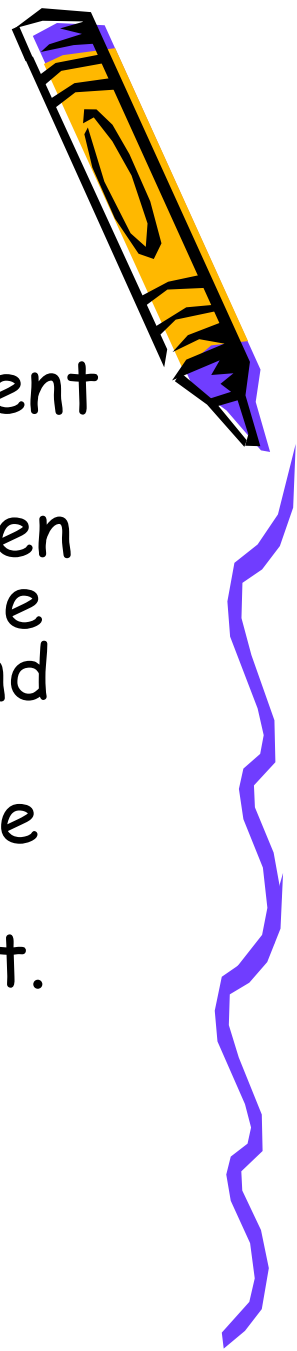
"theories or conceptual frameworks people pick up from popular culture and use in their daily efforts to make sense of events and plan their actions.

We ... are apt to go on using them until we get far enough into some endeavour that we need specialised knowledge" (p. 9).

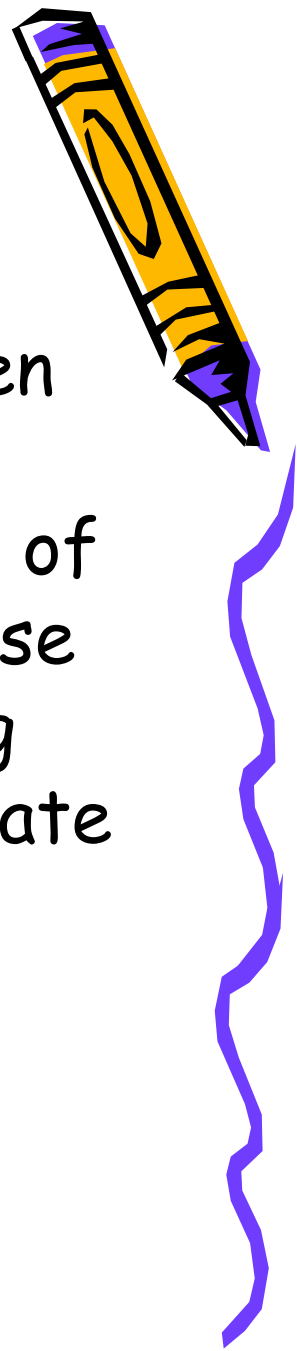


# Towards a definition II...

Working theories are present from childhood to adulthood. They represent the tentative, evolving ideas and understandings formulated by children (and adults) as they participate in the life of their families, communities and cultures and engage with others to think, ponder, wonder, learn and make sense of the world in order to participate more effectively within it.

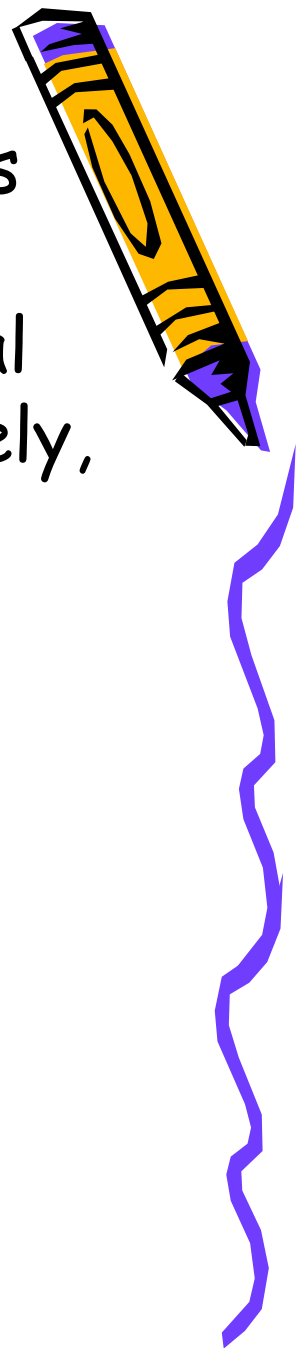


Working theories are the result of cognitive inquiry, developed as children theorise about the world and their experiences. They are also the means of further cognitive development, because children are able to use their existing (albeit limited) understandings to create a framework for making sense of new experiences and ideas.



Working theories represent the ways in which children process their experiences and ideas into conceptual understandings, and use this creatively, sometimes tentatively and speculatively, to interpret new information, re-interpret older information, and think, reason and problem-solve in wider contexts.

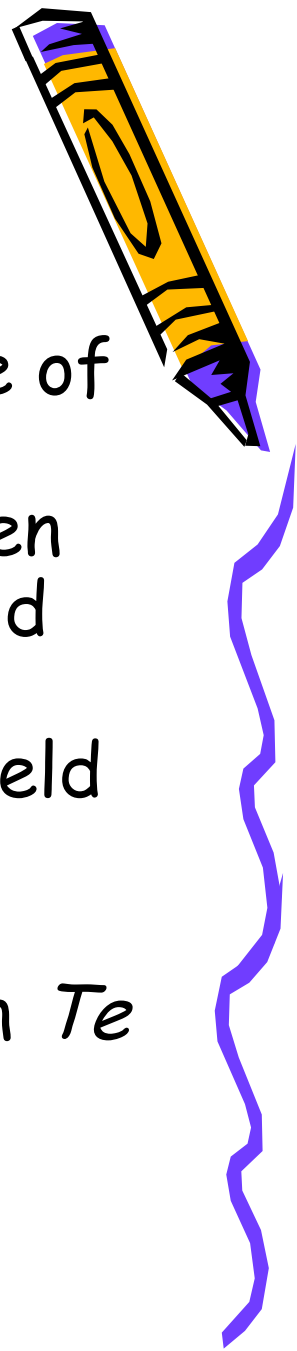
*- a strong link to key competency of 'thinking' in the NZ Curriculum*





# Analysis and interpretation

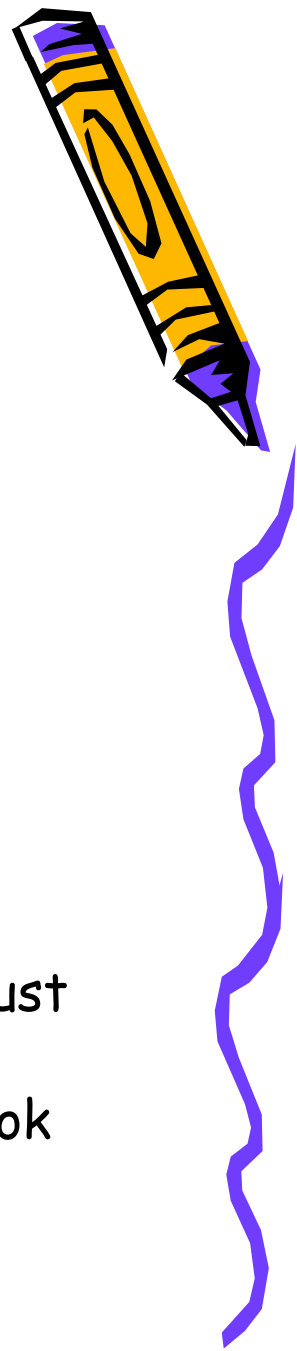
Because of the highly subjective nature of interpreting children's behaviour, we therefore made efforts to know children through multiple sources over the period of six weeks, drawing on children's own actions and words, and the knowledge held by the parents and teachers of these children. We first analysed the data in relation to the descriptive statement in *Te Whāriki*.



Key understandings:

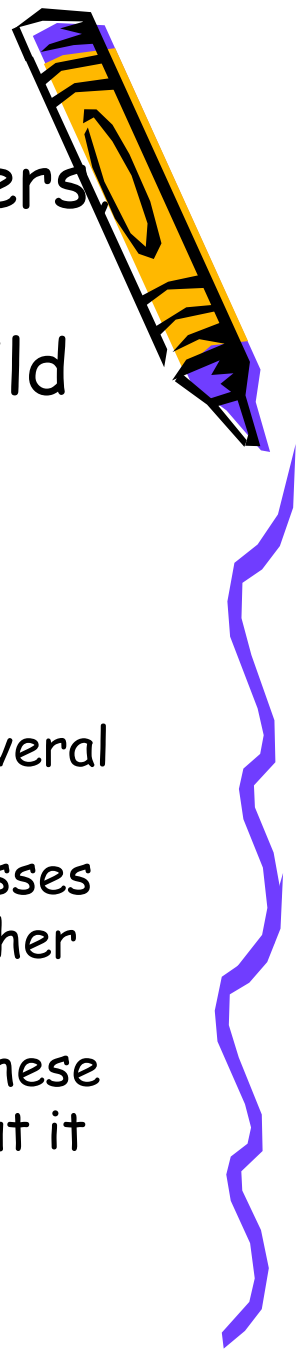
(a) Working theories are “increasingly useful for making sense of the world, for giving the child control over what happens, for problem-solving, and for further learning” (MOE, p. 44).

A common field of working theories concerned children's understandings of what it means to be a good friend. For example, when Dihini (4) comforted her friend who had just fallen over, and went with her to find an icepack, she was demonstrating her working theories about how friends look after each other.



(b) Through their interactions with others and as they participate in family, community and cultural life, children build up a wealth of experiences and understandings.

This connection between family experiences and the development of working theories could be seen when several children in the research project set up a pretend McDonalds drive-through, playing out the various processes and roles involved. They prompted and directed each other and improvised based on what they had observed during their own visits to McDonalds. Deanne (4) explained: "These are the packets. The food comes down chutes and we put it in the packets."



(c) Children's working theories are under constant revision, modified and refined on the basis of new experiences and new thinking, and through their engagement with others.

Many children were engaged in developing working theories about identity based on gender differences. Some children had very strong ideas about appropriate behaviour for boys or girls. Isabella (4), for instance, was adamant that daddies are not allowed to take care of or even carry babies, only mummies and nanas. This was disputed by Jade (4), whose experiences and working theories were obviously different: "but boys can look after babies because my brother babysat me."



Likewise, we can see working theories on friendships evident in this conversation between three young boys:

Brooklyn: "Everyone is my friend."

Keegan: "Everyone is my friend"

Oscar: "Everyone is my friend"

Brooklyn: "No, they are my friend, because I have a mean-as racing car."

Oscar: "Well I have a big transformer"



(d) Working theories are driven by intellectual curiosity.

Lionel (4) displayed this curiosity when he spotted an envelope on the floor and connected this to what he had noticed at home: "This is for writing letters... I see Mummy and Daddy get letters like this..."

There is a strong interplay between working theories and dispositions such as curiosity, as each drives the development of the other.



(e) Working theories are motivated by children's desire to understand and make sense of the world and to become active participants in the daily life of their family, community and culture.

Isabella (4) has developed complex working theories about how to make dumplings - and about their significance to her family and cultural identity. She often made playdough dumplings and was able to explain all the ingredients and steps involved, based on her experience making them at home with her mother and grandmother: "All of my family know how to make them but the other children at Small Kauri and their mums don't know how to make them. Just my family."



# Pedagogical dilemmas:



Teachers noted that sometimes children's working theories could be "outrageous" or "totally ridiculous but great to hear" (Hedges, 2011).

Anna ... the other day in the sandpit someone said oh the volcano that we made is milk and we're giving the milk to our cow and ... it can't make its own and it needs to feed its babies so they'd just taken two different things and linked them together and that was their knowledge of the world. It doesn't have to be right, it's just piecing together all the parts I guess and working it out. (KiNZ/1/10)





# Radical-local teaching and learning

Chaiklin and Hedegaard's (2009) concept of "radical-local" teaching and learning to emphasise combining intellectual concepts with the local content and conditions in children's families, communities and cultures.



Teachers discussed the dilemma that can occur over whether or not to "correct" a child's inaccurate ideas and understandings - and whether parents will be critical if teachers accept flawed ideas without correction.



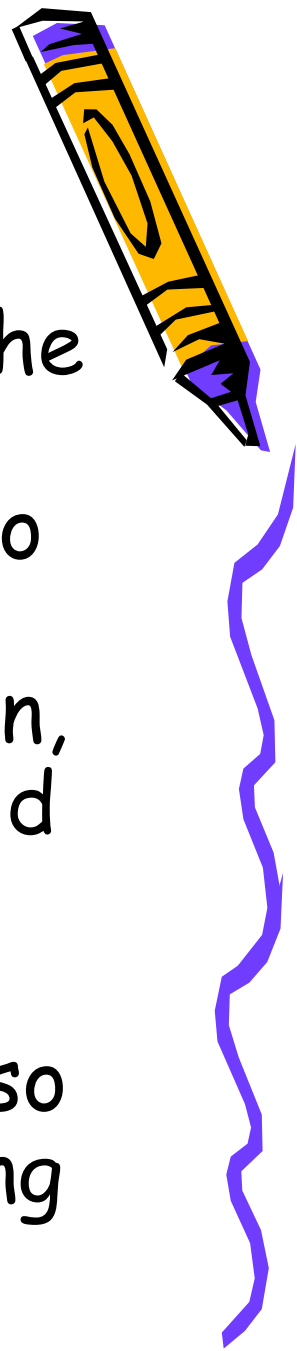
Daniel

*I think as a teaching profession we need to know that you can identify a working theory, write a learning story about it and the working theory can be completely wrong [conceptually] but you can feel comfortable. ... [Name] was trying to work out about her ears and why they were stiff and she ended up saying they had bones in them and I left it at that actually and I didn't start talking about cartilage. ... I wouldn't want to write that because I would see that as a slight on me that the parents would think "You're not doing your job. You haven't taught them the right way."  
(SK1//20-21)*



# Pedagogical implications

With increased understanding of the concept of working theories, teachers may be more easily able to notice, recognise and respond meaningfully as children think, learn, wonder and make sense of the world around them through working theories that explore their fundamental inquiries. They may also be able to explain children's thinking to parents/grandparents.



# Project team Teaching and Learning Research Initiative 2012-2013

Helen Hedges (Principal Investigator)

Maria Cooper (co-investigator)

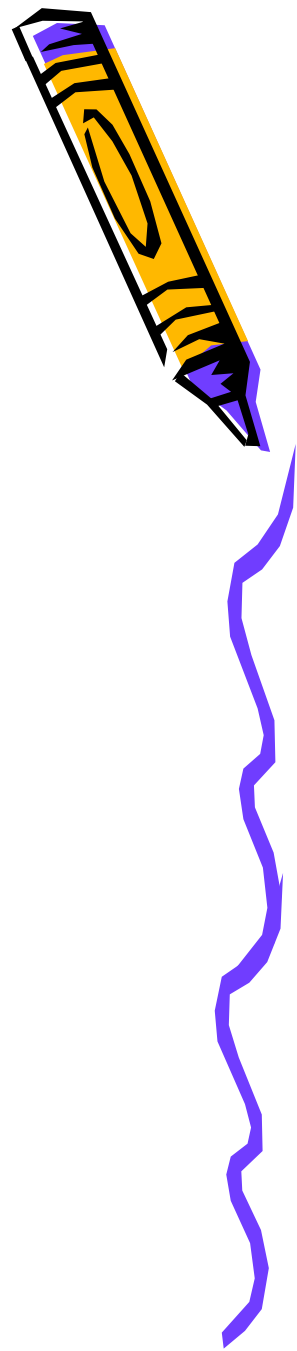
Daniel Lovatt and Trish Murphy (teacher-  
researchers at Small Kauri ECE Centre)

Kirsten Owen and Lindy (teacher-  
researchers at KiNZ Myers Park)

Susan Batchelar (project manager)

Sarah Jones (research assistant)

- See <http://www.tlri.org.nz/tlri-research/research-progress/ece-sector/inquiring-minds-meaningful-responses-children%E2%80%99s-interests>

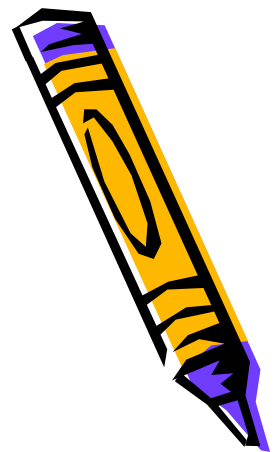


# TLRI

Title: Inquiring minds, meaningful responses:  
Children's interests, inquiries and working theories.

Research questions:

*What is the nature and content of infants', toddlers' and young children's inquiries and working theories in relation to their everyday lives in their families, communities and cultures?  
How might teachers notice, recognise, respond to, record and revisit infants', toddlers' and young children's interests, inquiries and working theories in early childhood education?*



# TLRI

A qualitative study - participant observation by the teacher-researchers to generate fieldnotes, photos and videos, plus interviews with teachers and children, and parent diaries and photographs. It will also include a funds of knowledge methodology whereby the teacher-researchers visit children in their family homes.

Collaborative data analysis will occur, initially using the description of working theories in *Te Whāriki*, and, later, repeated ideas and topics that link to the theoretical frameworks of interest to teachers.



# Key messages

- listen to and take children's thinking seriously
- encourage participation in everyday activities
- encourage intellectual puzzling





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