

Working with working theories: The teacher's role



ECE resources

Te Whāriki posits that children learn through the development and revision of working theories as tentative and ever-evolving knowledge structures. Teachers can play an important mediating role in supporting this learning to become more complex. Mediation can both be indirect (such as planning environments and making resources available) and direct, through [intentional interactions](#). The teacher's role includes supporting children to express, modify and extend their working theories, and identifying and analysing children's working theories in order to reflect on and support learning more deeply. Teachers may also intentionally choose to scaffold the development and modification of working theories more directly.

Encouraging children to express, modify or extend their working theories

Children's overt expression of working theories is found to be dependent on quality relationships and on dialogue that supports children's inquiry and construction of knowledge, so teachers' interactions with children form a significant part of working theory formation and development. To foster children's working theory development, research suggests that many strategies are required to be used simultaneously. These include:

- **Developing strong relationships** and knowing children well so you can judge the best direction for interactions that will stretch and challenge children while maintaining their sense of competence and confidence. Relationships are strengthened when you slow down, give children your full attention, and listen without trying to predetermine the outcome. Allow for children's interests to lead interactions and try not to 'hijack' the direction of children's theorising with your own agenda or ideas.
- **Providing problems and contexts for children to theorise about** that they are likely to find meaningful and important. While open-ended contexts are important, the presence of some constraint, boundary or structure can provide starting points for developing working theories and enable children's greater creativity. For example, offer children a challenge such as drawing or creating a strong house for some model animals.
- **Repeating children's ideas and theories back to them** and using verbal and non-verbal prompts, or pauses, to encourage children to keep talking or to invite children's further clarification or extension of ideas: for example, 'so you think that the rain might have had something to do with it?' Verbalising your guess at what the child's working theory is enables children to articulate and clarify their thinking.
- **Promoting interactions between children and between children and adults** that focus on shared inquiries, thinking, participation and engagement within shared activities as well as specific scenarios for exploring working theories. Facilitate group conversation by focusing on inviting and involving other children in the conversation or inquiry: for example, say things like 'Did you hear what Sabrina said about...?' and summarise ideas to enable shared understandings. Plan group discussions and engage in spontaneous conversations to formulate individual children's problems and concerns in a way that invites group consideration. Group conversations help children to revise

and refine their theories and to construct meaning as they articulate their own perspective and listen to other views.

- **Responding positively to children's initial theorising**, which might be magical rather than common-sensical, incomplete, illogical and inaccurate, but nevertheless important for developing a sense of intellectual curiosity and for contributing to more sophisticated theorising later on. It is not always necessary to confront children's theories or introduce more accurate information. You might say 'that's an interesting idea' or 'I like the way you are thinking imaginatively about this'. Avoid dominating interactions or correcting children outright, and choose to address children's misconceptions at another point rather than disrupt their theorising at that moment.
- **Extending spaces for uncertainty**, rather than concluding children's theorising by supplying facts and direct answers or moving children to more familiar ideas, to enable the important learning that takes place as children struggle with ideas and concepts. Join the conversation without being an expert or knowledge holder, and try not to overtake children's ideas with your own but provide sensitive interactional support (and plenty of thinking time) for them to explore their questions. For example, rather than 'you're right!', use language such as 'could be' which keeps ideas open and demonstrates an expectation for more ideas and continued refinement.
- **Supporting children's inquiry** by being a 'thinking companion', by puzzling alongside children, and modelling inquiry and information-seeking activities such as hypothesising, using resources (such as books and models), asking questions and trying things out. Use phrases such as 'I'm wondering about...' and 'how else could we find out more?'. Add materials and resources, offer new experiences and field trips, or share information which explores the same kind of underlying ideas and concepts to enable children to begin to make connections.

Identifying and analysing children's working theories

Children's working theories can be identified from their comments, actions, behaviours and interactions with teachers and peers. Working theories may be explicit, for example, in a child's statement that a particular toy is 'for girls', although they are often more subtle and easily missed. Children may have working theories about how to learn (for example, that you need to observe what older children do first or you need to get others to help you), or how to perform actions (for example, that you need to bend your knees to jump or you need to assess the distance once you have climbed to the top), as well as more specific, factual knowledge.

Younger children are more likely to represent their working theories through actions, body language and behaviours. It takes some care and attention on the part of teachers to identify children's current working theories. Tips include:

- **Listening carefully to identify children's working theories.** Take care not to make assumptions about children's interests or pick up on obvious topics associated with children's interests, such as volcanoes, as the topic may actually serve as a vehicle for children to inquire about a more deep-seated interest, such as reactions and forces.
- **Videoing children at play** and spending time analysing small portions of the action to uncover children's working theories. Video is found to be successful in promoting teacher reflection on identifying working theories due to the potential for pausing and repeating segments of play. Use video to help you slow down and spend time puzzling over particular segments of play to develop deeper understandings of working theories.

- **Documenting children's activity** to support the identification, tracking and revisiting of working theories. Question what you see and why you might see be seeing it, how it is connected to children's experiences, and what working theories might be behind children's actions and ideas, recognising that you can't always be certain of these. Engage in professional dialogue and joint reflection with colleagues and families for their ideas, and seek multiple cultural viewpoints. Narrative can also enable children to revisit their working theories and engage with them more deeply.
- **Dialoguing with children**, or offering them further resources and noting their responses, to learn more about their thinking and determine if your analysis of their working theories is well-placed. Find out about children's lives outside the early childhood setting to help you identify and understand their working theories.
- **Trying to identify the knowledge, skills, strategies, attitudes and expectations** that accompany a working theory. Use the following questions to help analyse children's working theories:
- **What are the different components to the working theory and how are they connected?** For example: a child hands out teddy bears to other teachers and children in the room. Is she thinking 'I like teddy bears, so you will like teddy bears too'?
- **What information, knowledge or experience is the child connecting to create a theory?** Does the child seem to assume that some toys are particularly desirable; people share similar likes and dislikes; people want to be given toys that they like; or that giving toys can make people happy?
- **How does it serve the child? What function does it have?** For example, does it help the child to make sense of something, or to act more effectively in their environment? Is this a working theory for making friends? Or a theory about 1:1 correspondence (every one person needs one teddy bear)?
- **How has this working theory developed over time?** What has influenced its development? For example: the child may have been observed handing out other items, or may have been the recipient of another child handing toys to her.

Specific scaffolding techniques for the development of working theories

Scaffolding is a specific teaching strategy that accommodates and builds upon children's prior learning, skills and working theories to reach a higher level of thinking or capacity. Teachers need to decide which working theories are most important to respond to in this way. Some working theories will be stable, and others developing (and therefore inconsistent or in flux). Some theories may be offered in a throwaway manner, such as 'Don't touch the spider, he will bite'. Stable and throwaway theories may not be significant to the child's current knowledge-building activity and hold less potential for modification.

Teachers need to think carefully about when to introduce ideas, concepts and information, or explore contradictions and anomalies, responding to subtle nuances of children's behaviour and comments. Children are not always ready for challenge and new information does not always help children to improve their understandings. This is because children need to be able to connect new concepts to their previous learning and experience in order to integrate them into their current thinking and to modify their working theories. Introducing concepts too early, before children have enough experience, may lead children to reject new information and continue to use their own ideas to understand phenomena. The following strategies can be used when you think children might be responsive to developing and revising their working theories with some support:

- **Encourage children to reflect upon experiences that might inform working theory development.** Revisit and recap experiences, activities and previous working theories by using photo and video, for

example, to help children make connections in their thinking. Give children opportunities to express their working theories through drawing and other media including model making and block building, and put these on display to encourage children to dialogue with you and other children, teachers and families about and through these representations.

- **Support children to notice and act upon particular details** of a learning episode. Describe what you notice, repeat children's words, and question children to draw attention to particular features. Comment on connections between ideas, and invite children to suggest reasons or theories for these connections.
- **Model conceptual language and labels** that children can then incorporate into their theories. Proper vocabulary is important in the development of concepts, so scientific and specialist words should be used whenever possible.
- **Help children to extend a line of thinking** by asking them questions about the reasons for or consequences of actions and ideas, or by asking them to consider different perspectives and alternative possibilities.
- **Actively challenge and disrupt children's thinking** to create disequilibrium, or a sense of dissatisfaction, perplexity or tension. This occurs where new information doesn't quite match up with existing understanding, and drives children to revise their theories. Be careful, however, that you don't position children as wrong, lower their self-esteem and inhibit their desire to develop a richer or more complex working theory.

Further Reading

Hargraves, V. (2014). Children theorising about their world: Exploring the practitioner's role. *Australasian Journal of Early Childhood*, 39 (1), 30-37.

Lovatt, D. (2014). How might teachers enrich children' working theories? Getting to the heart of the matter. *Early Childhood Folio*, 18 (1), 28-34.

Peters, S. & Davis, K. (2011). Fostering children's working theories: Pedagogic issues and dilemmas in New Zealand. *Early Years*, 31 (1), 5-17.

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