

### Wondering why?

*Exploring scientific thinking in an emergent co-constructed curriculum*

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*Science is a way of knowing and finding out about other living things, the world we live in and ourselves. Science raises the question “I wonder why ...?”*

*Technology is about the application of science and it involves thinking about a problem and working out how to solve it. Technology relates to tools, machinery, problem solving and how things work. Technology raises the question ‘How ...?’ (Young & Elliott, 2003, p.9)*

Consider the elements of science that young children might explore: the animal and plant world; natural environment; earth (geology, night and day); space; properties of materials (sorting, classifying); changes to materials; how things work (machines, electricity). Many of these content areas can be explored in the everyday experiences children engage in.

*Look at an everyday object or experience and ask yourself: where is the science in this?*

We can capitalize on children’s curiosity. A key role of teachers is to scaffold children’s learning. What is the impact if teachers feel insecure or inadequate with anything to do with science?

*Albert Einstein once said play is the best form of research. It is now widely recognised that children learn through play. All children seem to have a natural curiosity to actively explore, ask*

*questions, make connections, and understand themselves and their world. Adults can act as role models to support children’s explorations. However, for this to occur, it is important to listen, observe, ask questions, supply interesting and relevant materials and relay a positive attitude about the value of science. Science is all around us and it is up to us to identify the science in everyday life. (Commonwealth of Australia, 2009).*

Open-ended materials and conversations, listening and talking together about possibilities, form the basis of scientific learning through play. What’s of interest to children? How do we find out? What could we do?

*Adults have a significant role to play as mentors and supporters when children explore, investigate, experiment and ask questions. Adults listen, observe, ask questions supply interesting and informative materials, set the stage for inviting ways and express positive attitudes about the value of science (Young & Elliott, 2003, p. 10).*

Fleer and Cahill (2001, p. 2) warn that what is significant to children may well be different from what is significant to adults. *The interest children show in topics chosen by adults is significantly less than their interest in topics identified by children themselves.*

The use of an interactive approach allows us to find out what children think and encourage them to ask questions. What do we know? What do we want to find out? How can we do this? (Fleer & Cahill, 2001; Young & Elliott, 2003).

Children ask questions relevant to them. Teachers can reword their thoughts into questions. When we display their questions, this helps children see that a range of views about the same thing is possible. Teachers do not need all the answers. We can model learning dispositions when we learn alongside children.

### So what is the educator's role?

The role of the educator is to:

- monitor interest
- record ideas and questions
- facilitate investigations (suggest a range of ways of investigating)
- scribe their findings
- organize sharing sessions (Fleer & Cahill, 2001 p. 15).

Is it only science if we're scaffolding information? *It is the early childhood educator's challenge to bring the scientific and technological realities of the world into the realms of a child's understanding in a meaningful way* (Young & Elliott, 2003, p. 15). Questions become important. Use open-ended questions e.g. Why do you think...? I wonder...? What could happen if...? Sometimes more direct questioning may be needed to gain insight into children's understandings. Be aware of children's experiences, family culture and attitude to children asking questions.

### How do we encourage children to ask questions?

We should:

- create an atmosphere – our responses inform children. Build relationships

with children which encourage conversations.

- list questions children and adults are investigating
- allow time for children to ask questions
- use an interactive approach (placing children's interests central to planning)
- model asking questions to clarify understanding and prompt further thinking.

What about scientific language? Be mindful of the competence of children. However, modeling the use of scientific language helps set science in the everyday – not just as an isolated science activity. Consider the use of the words such as explore, investigate, hypothesise (wondering plus working out possibilities), potentials, possibilities, curiosity, reflect, observe and listen. We can make links in children's play and learning to these scientific terms. Using correct terminology (soap flakes dissolve, not disappear; water evaporates, it doesn't change into air; electricity is conducted, it doesn't flow; magnets attract, not stick) provides foundation for construction of sound scientific concepts.

*Does the environment allow for possibilities ... where curiosity, wonder, thinking, problem solving, well-being and involvement are cornerstones for learning?*

Provide time for children to explore. Celebrate the wonder of science in the everyday, each day!

### References

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