Writing science for preschool educators

By Scott Taylor

For most of us, the phrase 'real world' means precisely that – something that exists in the real world (as opposed to fairy tales and cartoon characters, for instance). Exposing young children to the many diverse and wondrous things that exist in the real world is one the things I love most about writing science material for young children. But what exactly is the 'real world?'

I've been fortunate enough to spend several years writing educational science material for young children at Let's Talk Science, a registered national education charity reaching youth and educators in early years, school, post-secondary and community settings.

A number of questions arose as I began writing science activities for kids. Chief among those were, how do young children learn and what can they understand? Answering the first question was easy: as any parent can attest, young children have a natural tendency to relentlessly explore the world around them at every opportunity. Hence, a hands-on, real world approach is an ideal way to engage children in learning, and also happens to be an ideal way to teach science.

What young children can understand is a more contentious question. Perhaps the most important thing I discovered while field-testing activities was that young children are much more capable than many people give them credit for and can understand some fairly sophisticated concepts, provided that they are explained in an appropriate manner. The secret, of course, is figuring out what the 'appropriate manner' is. The key in determining that appropriate manner is to think about how to demonstrate the concepts in a concrete, hands-on way. To do this, I would often resort to simulations and analogies. Properly presented, simulations and analogies can illustrate just about anything to the children.

One activity I developed was about the different ways that animals eat. I chose an extreme example of animal adaptation: how the giant anteater's long tongue allows it to collect ants in an anthill. Since early childhood educators are unlikely to be able to bring a live anteater into a classroom for children to observe, I had to figure out a way to convey the concept in a meaningful manner that children could relate to.

Using an empty pop bottle (to represent the anthill), chocolate sprinkles (the ants), a straw (the anteater's snout) and a piece of red string liquorice dipped in honey, children could see for themselves how an anteater's tongue solved the problem of gathering food inside a hole in the ground. The children understood that an anteater has a tongue, as they do, but that an anteater's sticky, 60 cm (2') long tongue could reach into very small places to grab food.

Such analogies and simulations – if properly introduced and with explicit guidance and careful use of questioning – can get children to make the connections between a hands-on demonstration and the real world without difficulty. Developing children's abilities to see similarities and differences in this way enhances their understanding of and ability to use knowledge. Seeing children extend the analogies, drawing in other examples to show similarities and differences, is evidence that they are making the conceptual links and demonstrating an understanding of the concept.

For some people, however, 'real world' has a much narrower meaning. Some early childhood educators consider the 'real world' for a child to be only something that a child can actually touch in his or her environment. Hence, things like whales, dinosaurs and submarines would not be considered 'real world' any more than talking crayfish, dragons and starships. Their belief is that young children cannot differentiate between what is real and what is not unless they can see it and touch it for themselves.

As a person who vividly remembers watching the first Moon landings at age four and understanding that it was real, I take issue with this interpretation. I am a strong believer in expanding children's horizons at an early age and showing them the wonders of the real world. At times we have had to defend our approach when people's view of 'real world' differs from ours, but the firsthand experience of field-testing activities with young children and observing the results makes me confident that young children can become aware of the world beyond their immediate environment. I would recommend anyone writing science for young children to not feel limited, but rather to think about how to make the world accessible for young children to discover.

Scott Taylor, BA, MA, BEd, is the Project Coordinator for the Wings of Discovery Early Years Program at Let's Talk Science. As well as working on Wings of Discovery and developing and delivering education programs in museums for five years, Scott is married to Kim Taylor, also a developer at Let's Talk Science, and the father of five, so he has plenty of experience helping young children learn.