



Xientifica SOS

Article in PrimaryFirst (issue 23) Daniel Phelps

Learning Science through the Power of Narrative

We all vividly remember certain films that we watched and stories that we read as children. I clearly recall sitting at the feet of my first teacher, Miss Pool and being captivated by *Emil and the Detectives* and several years later being entranced by *The Coral Island*, *The Lord of the Flies* and many others. Those stories from childhood have been locked in our memories, each a time capsule of mental images; characters, imaginary worlds, obscure details and emotions. However, I am not sure that we take full advantage of this incredible power of narrative and its potential as a vehicle for teaching across the primary curriculum.

Firstly, let us remember, children are *'wired to learn'* and our role as educators can be simply to create an environment for that natural learning process to unfold. Through interactions in the playground or gaming with friends for example, children are able to learn astonishing facts and figures as well as copious 'useless' information. It can seem effortless. I still, even now, underestimate what children are capable of learning – when they are 'not learning'!

A story can support learning in multiple ways and at many different levels. Firstly, stories are able to create an environment conducive to learning. When children are engaged and interested, they will learn. So when they are engrossed in a story, a perfect learning environment already exists. That environment can be both external, when a classroom becomes silent as the teacher reads aloud, as well as internal, where minds are quietened, relaxed or expectant. Narrative however, can do much more.

I first drafted *Xientifica SOS*, my first novel, in the early days of the national numeracy and literacy schemes. I had taught only for a few years, but had become frustrated with the prescriptive and rigid nature of the lessons I was teaching. I wanted another, more creative vehicle, to add to my teaching repertoire. So I set out to develop a series of standalone chapters, or short stories - each focussing on a different science topic. A child may not be a fan of science text books, but many children love learning amazing science facts and love a great story. I envisaged reading this last thing on a Friday afternoon as a fun activity. With a packed timetable, I thought the luxury of *storytime* could be 'justified', as this would also *double up* as a science lesson! I didn't quite stick to the plan. My series of individual stories developed into a full blown adventure novel, where five pupils are thrust into a fight for survival. Although I read this early version to one of my year 6 classes, *Xientifica SOS* stayed resolutely hidden on my hard drive, not ready to share with the world. And that is where it remained, until last year.



Narrative can create the perfect context which is so vital in helping children's understanding, especially of new concepts. The context created by a story creates a 'scaffold' or as I call it, a 'context web'. By carefully constructing the context, you are providing readers with a strong prop for their understanding. Each aspect of the narrative can of course be crafted intentionally to illuminate and provide clues to aid comprehension.

A 'context web' that is familiar to children will also support their retention of new information by providing a mooring for its assimilation. Again, by purposively fashioning the context and enriching it at a level commensurate with a child's level of understanding, that 'context web' can become a firm anchorage for that new material.

A story will also reveal through the context it provides, how concepts are applied. This is important since the purpose for learning about those concepts will be evident. Children, as they grow older, often object that there is no point to learning a particular thing. However, by the careful choice of a narrative which appeals to the imagination and to the interest of children, any such potential objection can be nullified. For example, in my story, the characters must use their understanding of scientific concepts in order to survive on their deserted island.

As a children's poet, I've also included poems and riddles throughout the story as a further way of facilitating learning, after all, those nursery rhymes that we learned as children are still embedded within us! Different 'memory hooks' are also scattered throughout the book to help the reader remember facts. So the inclusion of the phrase '*Run Or You'll Get Boiled In Veg*' should now be understood, in the context of 'rainbows'!

Lastly, the characters themselves within a story can also play a significant role in supporting children's learning. The child characters in my story each have particular gifts (Luke Close has of course amazing powers of observation). The characters pass on their knowledge and skills to each other and so the reader is also being taught by other 'children', tapping into Vygotskian theory of learning.

I have intentionally tried to encompass all these concepts within my story, in order to support the learning of science, as well as simple and colourful illustrations. However, where a teacher has no time to craft a story from scratch, the power of narrative can still be exploited in other ways. Firstly, books (and films) can be carefully selected for independent or class reading, to complement or prepare for the teaching of specific topics. For the more adventurous, storytelling and drama could be employed. With older children, they themselves can use these ideas of using narrative in their own writing to explain science to others.

Narrative has incredible potential as a fun and creative vehicle for teaching science and other curriculum areas, helping children's understanding and aiding their retention of ideas. Stories can not only support the learning of specific subjects but can be the perfect platform for encouraging questioning in those subjects and for inspiring children to explore those subjects further. Children however are smart and therefore the stories we offer them must be authentic. They must be able to stand on their own, as stories in their own right and they must be stories that children themselves would choose to read. We can then step back and watch their 'wiring for learning' light up brightly.

Daniel Phelps, October 2018

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