# Learning from the Past

## The Nature Study Pioneers and the Learning in Science Project

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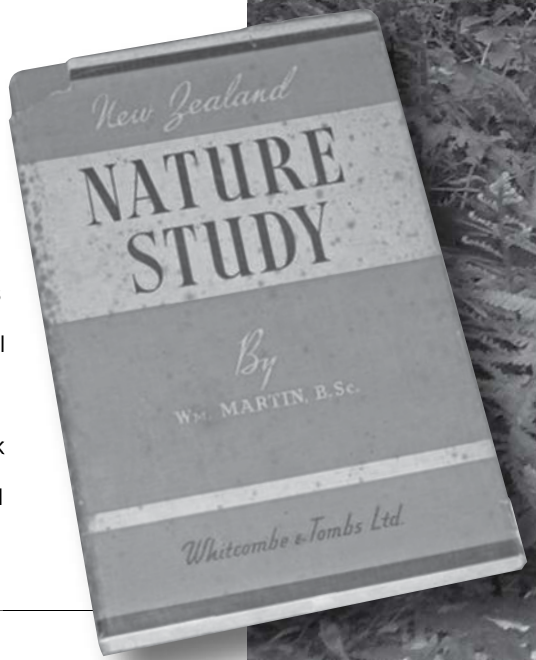
### The Nature Study Pioneers

**I recently came across and read a copy of the book *New Zealand Nature Study* - W. Martin (1947). The main principles expressed in this book seem just as relevant today and are in fact quite compatible with what might be considered 'modern' inquiry learning. Of course the true value of any approach depends on whether it is actually taken on board by teachers, and how well and how wide spread it is actually applied; a variable as significant in 1947 as it is today.**

However, right from the start of this teacher's handbook it asserts that pupils are to be seen as 'active seekers after knowledge and that NATURE is their teacher (pg1)'. So the emphasis is on the importance of the role of the learner. That is not to say the actual class teacher does not have an active role too, but rather is viewed as a 'guide, philosopher, and friend (pg2).' It is argued that 'in the hands of the skillful teacher nature study trains the child to look, to see, and to say: to think logically and arrive at sound judgments, to discriminate truth from error, fact from fiction: to develop self reliance and the perception of beauty: no less to give clear and fluent expression to his findings (pg2).'

Martin in fact identifies and describes a range of teaching methods, which include among others, such things as 'the project method', 'the problem method', 'the nature table method', 'the experimental method', 'rambles and excursions', 'continuous study' etc. All of these methods require appropriate indoor and outdoor activities and experiences to promote children's learning.

Martin is also determined that teacher's don't get distracted, that 'vital nature study demands as its ultimate objective not the growth of plants and animals but the growth of children's minds and personalities (pg3).' It is what is learned, the educational dividends that are considered important. Also he cautions that teachers should not talk too much. That nature study is not to be based on 'talks by the teacher but investigation by the



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pupil, not based on information culled from textbooks, but definite answers to specific problems or experiments from personal observation of nature itself.' The importance of direct experience and observation is repeatedly emphasised. 'The study of a blackbird is a hundred times more valuable than a talk about a kea, or a huia, or a fern bird (pg5).'

Martin argues that to teach facts about nature is not the main objective but rather it is about fostering an attitude of mind, mental alertness and enquiry into the meaning of things. But importantly the author then quickly states that he does not decry the passing on of information but crucially that it be about 'those things that claim the child's interest and attention.' And that 'the information must supplement and not supplant direct personal experience (pg5).' He then offers what he considers the best definition of nature study with a quote from Professor Geddes of Dundee that real nature study learning involves 'the habit of observing and thinking for ones self, at one's best, without books or help, in the presence of the facts, and in the open air (pg 5).'

Significantly a certain balance though has been achieved in terms of valuing the process of inquiry, the way that children learn, along with the product; that is what the child learns during the process. Of course any of the children's 'work' in response to their environmental investigations whether written projects, or any other form, are also 'products' that can be examined to gauge what sort of learning has actually taken place.

Martin acknowledges that New Zealand is richly endowed with an interesting indigenous flora and fauna that New Zealand children should learn about. The book consists of two main parts, one devoted to Plant Studies and the other Animal Studies in which teaching notes are provided for both native and exotic species. All of which promotes the idea of pupils engaged as active seekers of knowledge through outdoor experience and particularly their immediate environment.

Martin also identifies main aims that still ring true for modern application. Particularly that teachers should 'foster and preserve in their pupil's spirit of wonder and reverence and appreciation of beauty and promote and stimulate the child's inherent love of nature'. There is the conviction that children with guidance can make connections with the natural environment that will lead them to understand, respect and value it.

## *Nature Study – David Beggs*

However if we now move forward in time some 19 years or so you will find another 'environmental' handbook has been introduced for teachers and has become more widely used. This is entitled *Nature Study: handbook for teachers* - D. Beggs (1947).

Once again the principles and teaching notes still seem relatively modern and retain Martin's emphasis of the value of learning through direct experience. 'Nature is to be studied in such a way that children may have real experiences with real living things - observe them themselves, and try to find meaning in them (pg 11).' The school nature table and study of a bush area or school shrubbery and using 'nature track' methods are endorsed. Also, like Martin, this more recent book holds the central belief that 'the teacher should assist children in their own explorations of the living world (pg 13).' Beggs also holds a similar conviction to Martin that by learning about the environment children will learn to respect and value it and furthermore want to protect it. He notes that if a child studies and observes birds and trees they have gone a long way towards 'understanding the necessity for conserving forests and birds (pg 101).'

Beggs does appear to have taken on a more ecological perspective than Martin in the learning methods he describes. 'When you can, take the children into the bush area so that they may see for themselves the association of plant with plant, plant with bird, and plant with shade, moisture, and other environmental conditions (pg 101).' Also much information is provided to guide children in learning about particular native and exotic plants and animals and their related habitats and ecosystems.

You tend to get the feeling that during the 40's, 50's and 60's (the time of the Martin and Beggs ) that New Zealand children may have learned and known more

about our native flora and fauna than our modern generation of children. Both authors were likely influenced by pioneer botanist Leornard Cockayne who as early as 1923 in his book *The Cultivation of New Zealand Plants* had argued with considerable passion that children should be involved in the planting native trees in their school grounds and that it was important that New Zealand children should be 'learning something about the plants of their native land.'

## *Learning in Science.*

However this leads me to examine what I think potentially is perhaps the most 'recent' significant contribution to learning in science in general and what consequently has led to the possibility of very significant improvements in the environmental education scene.

I refer to the N.Z. Department of Education funded project carried out at Waikato University from 1982-1985 and known as the *Learning in Science Project*. The relevant text or handbook that grew out of the work of the project was called *Making Sense of Our World: an interactive teaching approach* - edited by Fred Biddulph and Roger Osborne (1984). It is a world away in format from that of the earlier two handbooks, it is more like a working document and record of trialed teaching units designed to outline and illustrate the ideas and main components of what they call the 'interactive teaching approach'.

The main point of difference of this approach from Martin and Beggs is that it begins by seeking out the existing views and ideas of children in order to engage them in what is regarded as 'useful' and 'genuine' learning. The allied research and learning theory tends to confirm that knowledge is not 'real' knowledge unless it can be sincerely believed and understood. It has to make sense in the fullest meaning of the word; that it has to connect, it has to fit in with or be a modification or improvement of what the learner has already learned for themselves and must be coupled with an individual's sincere desire to know something. The child's own observations, questions, ideas, and unique interpretations are considered vital in this process.

What the research showed was that children already hold ideas about their world which to them are 'sensible and useful' and which can 'influence their learning in significant ways (pg 10).' The teacher's role is seen in terms of helping children make better sense of their world, so the first step is to find out what they think and then to find ways to assist them to 'construct' more effective ideas. The point is that attempts to simply transmit correct information may act to impair or confuse the more 'useful' ideas the children already have or simply will soon be forgotten.

The approach developed by the *Learning in Science Project* highlights the value of first-hand observation and relevant experience coupled with 'interactive teaching' to guide children towards learning for themselves, and making better sense of their world in the process.

It is also a process in which children are gradually being equipped to take more responsibility for, and take an even more active part in their learning; and requires the teacher to provide children with 'stimulating experiences that will develop and extend their interests and natural curiosity and facilitate genuine involvement in their learning'. Then, 'to help children develop, clarify, modify and extend their ideas through seeking answers to questions they are interested in (or become interested in) (pg 10).'

The subsequent studies children do should not only reflect their own thoughts and observations but also their own personal interpretations of what they have noticed and their own interpretation of what else they have found out, read or heard, from other sources, internet or otherwise. Investigation is not simply a process where children find out what others think or believe using an Internet search engine, or technology driven teacher presentations, or any other second-hand or ephemeral information source for that matter. On the contrary investigating with this approach is seen and understood to be an active

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learning process where the students, find out and decide what they think or believe for themselves. Martin's concern mentioned earlier, that 'information must supplement and not supplant direct personal experience' is highly relevant in this approach.

When children describe, make comparisons or analyze what they have noticed the language they use is highly personal and when they confidently do their thinking out loud they are able to make very acute personal observations and comparisons and draw unique conclusions. The interactive approach confirms that the 'voice' and unique perspective of the learner has at all times to be clearly evident and respected. This requires a combination of sensory, observational, emotional and intellectual elements and is essentially driven by the child's natural curiosity about their own world. The consequent learning then is purposeful, self-evident and is as unique as the personality of the learner.

The interactive approach also highlights the value of seeking children's after views at the end of an investigation. This is not only a useful in assisting teachers to gauge what changes or learning has taken place but when 'before' and 'after' views are shared with the children they too are able to evaluate and better appreciate their own learning.

The approach does not intend to be totally 'child driven' but rather confirms and emphasises is that when children are interested in something and are actively engaged in their own learning, not only do they tend to enjoy what they are doing more, the actual and 'real' learning that is taking place is more effective, pertinent and useful to them. It is the nature or relative strength of this engagement that determines whether 'genuine' learning is taking place or not. The teacher's vital responsibility is to provide the relevant experiences and guidance that will develop and extend the children's interests and ideas and importantly help improve their capacity to learn for themselves.

## *Learning from the Past.*

I believe educationalists today should be providing opportunities for children to make a real learning connection with the natural world. New Zealand children should learn and know about the indigenous plants, animals, habitats and eco-systems of their own country and their own local environment as a first priority. Environmental education should also primarily involve first-hand experience in which the child's full sensory, emotional and intellectual powers of observation and interpretation may be applied to the actual reality of living things in their natural setting. It is also in this context, to paraphrase Martin, that we can foster and preserve a child's natural curiosity, spirit of wonder, appreciation of beauty, and in short promote and stimulate what may be argued is a child's inherent love of nature.

Furthermore it needs emphasising that depth of learning in environmental education requires depth of teaching with programmes that have real content and substance, and presented in contexts that provide relevant and first hand learning experiences for its students. The nature study pioneers had a lot to offer in this field while the interactive teaching model strengthens the possibility of more effective and personalised learning and allows and equips students to take more control of, and greater responsibility for, their own learning.

As educationists, our overriding focus should always be on the development of a child as an independent, positive and creative, thinking individual in control of their own purposes and identity. When evaluating any programme we must look carefully at how well it has been applied and what has actually been learned as a consequence. Any of the children's thoughts, work produced, or subsequent actions they take in this context, in whatever form, clearly reveals the relative authenticity or depth of the learning that has taken place!