

My Earth Science Educator Story - Glenn Vallender

What I did, why I did it and what happened



Precambrian Introduction

As a member of the 'baby boomer' generation born on the Isle of Wight, England, my family decided to leave for slightly warmer climes and better opportunities on the opposite side of the world in New Zealand. Legal immigrants travelled by ship not aircraft in those days. Our ship was the *S.S. Rangitiki* and we passed through the Panama Canal, on to Pitcairn Island and arrived in Christchurch, New Zealand in May 1955. Although I started at Grange Road school in England, my main education was in New Zealand, graduating in geology at the University of Canterbury and much later, through distance education, a PhD from SMEC at Curtin University, Perth, Australia, in geological science education.

Paleozoic Times

I first heard of this thing called 'geology' when I was about 15 years old in Year 11¹. My lifelong friend Alan told me about it and since then we have both been involved in Geoscience education one way or another. We didn't have a clue what geology was about other than being something that dug a little deeper into the Earth rather than just looking at surface features and the distribution of cities and cows. I was always fascinated by looking at the photographs and diagrams in Sir Charles Cotton's 1957 edition of "*Geomorphology*". The

photographs made up for the rather dull narrative. Like many young people it took just one inspirational teacher² to provide thoughts for a future pathway into teaching and a belief that 'I could do it'. I wondered even then why 'geology' was not taught in schools and what fossils and radiometric dating were. Strike and dip came much later, but never at all for most!

Mesozoic Times

As a beginning university student I didn't realise that living in New Zealand was a geologist's dream with its own range of sub-disciplines, including tectonics, sedimentology, engineering, mineralogy and paleontology, all waiting to be studied. We were told in around 1970 that exploration geology for economic use was a boom-bust affair and this was shown by the worldwide crash of oil and mineral exploration by 1973. Driving across the Australian desert in search of iron ore and uranium in a 'land cruiser' was not for me. In the interests of job security, I was set on a career in teaching in which geology, I naively thought, should be included in a science curriculum. So, off to teacher training college I went and not a bit of geology was mentioned – the 'geographers' did not appear to really deal with the hidden world of the geosphere. We studied the pedagogy and curriculum for geography, social studies and science but actually very little on practical classroom and student management. This happens 'on the job'. The digitised 'virtual' students of 2016 are quite different to those of 1972. I did however survive my first decade of teaching teenagers, albeit with a few experiential bruises.

Cenozoic Times

In 1981 I finally found time to write a small article for the PPTA (Post Primary teachers' Association) on why **Geology** (and Astronomy) needed to have their place in the science curriculum. But of course, few people read this. It wasn't until much larger political forces reviewed the national curriculum in line with a global

¹ In NZ the final year of secondary schooling is Year 13.

² Mr Venz, our geography teacher

redirection of science teaching in the mid-1980s, that environmentalism and economic growth began to more seriously influence curriculum thinking.

Throughout the 80s, 90s and the first decade of the twenty first century, the 'baby boomers' were the front line managers and implementers of societal (via political agendas) and educational change. In NZ, assessment changed from being a filtering system for jobs with ranking by percentages, to the introduction of criterion-referenced, then standards-based assessment, and partially back again.

In 1985 I received a travel award from the then Geological Society of NZ to visit Keele University in England and I was able to spend some influential time with the late David Thompson, learning about the pedagogy of the earth sciences and being introduced to the Earth Science Teachers' Association (ESTA). David was an inspiration and I remember then talking about the need for an organisation that could promote the teaching and learning of the geosciences. I did manage to attend the 2nd International Geoscience Education Organisation (IGEO) conference in 1997 in Hilo as part of a Royal Society (NZ) Fellowship at the University of Canterbury³.



IGEO is born at the 1997 Hilo Conference. David Thompson in the foreground and Shankar on the left.

IGEO remains an important vehicle for geoscience learning and teaching but needs to be nurtured and driven. Later involvement with the early International Earth Science Olympiad (IESO) syllabus development was a valuable experience.



Chris King walking the talk on a young lava flow at Hilo, 1997.

Throughout this time, the national NZ science curriculum strand of *Planet Earth and Beyond*, enshrined in the 1993 curriculum document, struggled for survival. I became involved in the early writing of the 1993 National Science curriculum where geoscience eventually became equivalent (but not for long) to physics, chemistry and biology. I later became involved in national 'examination' writing and moderation of achievement standards as New Zealand moved from norm-referenced examinations to 'standards-based' assessment in 2002. Today, 'the standards' have become a proxy curriculum by largely 'controlling' what teachers actually teach.

Holocene Times

Retirement in 2011 ended thirty eight years of full-time classroom teaching of science and biology - the year after completing a PhD. So I never did get to wear my fancy regalia at a school prize giving ceremony! Retirement is bitter-sweet as it is the end of a lifetime of sharing with colleagues and thousands of students and the beginning of new directions.

³ I also managed to attend the 3rd conference in Sydney and the 4th in Calgary in 2003 but time, distance, life and cost has prevented attendance at another.



U3A members looking at the real world of 67 million year old sediments containing large concretions with nuclei of marine reptilian mosasaur bones.

I recognised very early the growing gaps between actual classroom practice, imposed political directions and the 'explosion' in understanding of how we learn and how we teach (or don't). As a result, I decided to see if these gaps could be closed a little by setting up an independent educational research company called Educational Research and Science resources (EdRSR Ltd: www.edrsr.co.nz) in which I offer evaluations of intervention strategies and assistance for science (especially Geo) teaching and learning as well as for administrators. It has been an interesting experience going from being part of the system to one looking in from the outside. I learnt that schools are very protective of their reputations and do not appear to have a good history of effective, sustained and evolving implementation of scholarly ideas about teaching and learning science, yet alone geoscience. Conversely, researchers have trouble getting their peer-

reviewed findings and advice into schools, and this is often obsolete by the time they do so. The gaps remain a significant challenge.

So, retirement has kept me connected to educational change but it has also provided an opportunity to become involved in the other end of learning – U3A or 'University of the Third Age'. This is 'educating' (and learning) from the top down rather than the bottom up where the grandparents teach their children and grandchildren about geoprocesses.

Other geoscience ventures involve editing the Geoscience Society of New Zealand Newsletter and writing geological resources for the interested public, educators and students. It has been particularly rewarding being the convenor for the GSNZ Geoscience special interest group where several projects are underway to support the learning of geoscience across the educational spectrum. For example, the new Rū 'Seismometers for schools project' (<http://ru.auckland.ac.nz/>) as is a web-based fieldtrip initiative and development of the 'Geopark' concept.

Why teach and learn about the earth sciences? Because it challenges and provokes change to the way one thinks and acts about the universe and the planet. Future generations need and deserve this opportunity. For me, studying Shakespeare didn't and still doesn't quite cut the mustard.

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