LOOKING FOR THE TIKANGA IN TECHNOLOGY EDUCATION

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Acknowledgements

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Chapter 1

Introduction

This dissertation is dedicated to understanding how it would feel to be disconnected from their own past and devalued as a race by colonialism; that is, how would it feel to be Māori in my class?

This dissertation aims to support New Zealand teachers of Technology to better understand how they can create a curriculum for Technology that is more connected to aspects of Māori culture and in doing so improve learning outcomes for Māori. At the same time it explores how Pākehā students could gain a better understanding of the tikanga that guides the essence of what it means to be Māori and what it means to be an honourable Treaty partner with Māori. The 1840 Treaty of Waitangi laid the foundation for a formal respectful relationship between Māori and the British and for the introduction of British rule of law. Despite the intentions of the Treaty being one of equal partnerships between the British and Māori, the Treaty did not eventuate to be the equal nor mutually beneficial agreement that was anticipated by Māori. Today visible disparities, that exist for Māori across society, are evident in Māori learning outcomes in Aotearoa New Zealand secondary schools.

This research explores my own praxis in secondary technology education in collaborating with Māori to incorporate tikanga Māori (Māori customary values and practices) into the classroom. A focus on tikanga and Technology provides opportunities to develop improved understandings of more inclusive learning contexts. This dissertation histories the identity evolution of me, the researcher. The process I utilised is a method of self-examination and identity construction for other technology teachers who want to improve their practices in teaching students who are Māori. This study describes a repositioning process of how I took ownership for self-improvement. To enable an emphasis for this, there is a particular focus on the Nature of Technology strand of the New Zealand Curriculum (Ministry of Education, 2007, 2017). Pacey (2001) discusses the possibilities of a more people-centred technology with a participatory, ethical experience of technology that values people as well as

their environment. In Aotearoa New Zealand, a teacher is encouraged to take personal responsibility for their engagement with an official curriculum (MOE, 2007).

My students and I have embarked on a number of projects that are localised both within our community and in wider society. These projects required us to have an understanding of tikanga. Mead (2016) requires that for educators and leaders to be more effective in what they do, they need to know the protocols that are drawn from the basket of knowledge called tikanga. My research explores ways to aid teachers develop understandings of Te Ao Māori (The Māori world) and the cultural world of Māori learners, with a view to promoting teaching that engages respectfully with, the knowledge of tikanga Māori in New Zealand Technology classrooms.

I have completed many years of teaching, much of which has been in the curriculum area of Technology. I have managed this with only a limited amount of supporting knowledge and understanding of how tikanga Māori could be appropriately and meaningfully, woven into my practice and the practice of my fellow Technology teachers as a result of my leadership. I am non-Māori and have practised as a teacher in New Zealand secondary schools for 29 years. Together with my students, we recently completed a number of Technology projects that involved learning about significant aspects of Māori culture including tikanga Māori. One whole school technology project was to build Te Whare Iti o Te Ako (The Small House of Learning) for our local early childhood centre. Because of this project and other related experiences, I have had the chance to reflect at a very personal level. I have had the opportunity to identify the gaps in my understanding of indigenous knowledge, but also through students participating in these projects, I have witnessed a tremendous engagement of curiosity for learning from both Māori and non- Māori about tikanga Māori.

Accordingly, this research study seeks to answer the following questions and supports my intention to become more effective in what I do and how I practise as a non-Māori teacher with both Māori and non-Māori learners.

- As a non-Māori teacher, what did I learn about and from, including tikanga Māori into my pedagogical praxis as a teacher of technology?
  - Who did I learn this from and how did I learn this?

- In what ways did these experiences contribute to my understandings of Te Ao Māori?
- How might my experiences support other teachers of technology?

I use Autoethnography to undertake this research which allows me to produce meaningful, accessible and evocative research that is grounded in personal experience (Ellis, Adams & Bochner 2011).

Literature review

Introduction

The literature review explores the potential for secondary school teachers to include tikanga Māori while teaching the New Zealand Technology Curriculum. To support this, a thorough review of the literature of Māori tikanga has been undertaken, enabling both a deeper and broader understanding of tikanga Māori. Historical events such as the arrival of the Pākehā and the effects of colonisation on Māori, including the Treaty of Waitangi and the overarching obligations for schools to this founding document in Aotearoa New Zealand today, are also considered. The review is divided into four sections:

1. Pre Pākehā history, and the arrival of colonial influence - Te Tiriti o Waitangi;

2. The New Zealand Technology Curriculum;

3. Tikanga Māori; and finally

4. Culturally Responsive Pedagogy.

While there is a separate section on tikanga Māori, the concept of tikanga Māori is woven throughout.

Pre Pākehā history, and the arrival of colonial influence

Te Tiriti o Waitangi – The Treaty of Waitangi

Since the early 1800s, Aotearoa New Zealand's history of Māori education has been closely linked to the history of colonisation and politics. The signing of the Treaty of Waitangi in 1840 brought about the formalisation of relationships between Māori and the British and the introduction of the British rule of law. The signing of the treaty was seen as a mutual partnership between Māori and the British in governing the land and peoples of Aotearoa New Zealand. Not all Māori chiefs agreed to sign the Treaty document, but those Māori who did sign, saw this document as a means of power sharing and decision-making (Bishop & Glynn, 1999). The mutually beneficial relationship that was anticipated by Māori did not eventuate. Commercial activity took advantage of the rich resources available to the increasing

number of European settlers arriving in Aotearoa New Zealand (King, 2003). Increasing British migration to Aotearoa New Zealand in the 19th century, together with the statement of the New Zealand Constitution Act of 1852, resulted in Māori becoming increasingly more marginalised as capitalist and imperialist state priorities became embedded. The Treaty relationship became all but lost and forgotten.

Te ao Māori prior to colonisation

Māori place great spiritual significance in knowledge. This significance is exemplified in the story of knowledge and wisdom acquisition and of the journey of Tāne in bringing all knowledge away from the darkness into the newly formed world of light. The house Tāne-nui-a-Rangi carved by master carver Paki Harrison (Walker, 2008, p.144) at Auckland University has a beautifully carved front wall depicting this story. The story calls for people to take the journey towards wise acquisition and use of knowledge. Tāne is one of the children of the first parents, Ranginui, the Sky Father, and Papatūānuku, the Earth Mother who journeyed through the twelve heavens to retrieve the knowledge to guide human existence on earth. This knowledge, in the form of three kete mātauranga (baskets of knowledge), was located in the treasure house Rangiatea in the twelfth heavens. Each of the kete contained a particular set of knowledge: the first, Kete Tuaatea contained the knowledge of spiritual realities peace, goodness, and love; the second, Kete Tuauri, contained the knowledge and understandings, that lie beneath our sense of experiences, such as prayers, incantations, and ritual, and the third, Kete Aronui, contained the knowledge of how we experience and understand the natural world through things such as war, agriculture, woodwork, stonework and earthworks. Along with these three kete two stones were collected. One red and one white. These two stones were used for the representation of knowledge. They were used to safeguard what was selected from the kete and ensure that the knowledge was used wisely and not just for individualised use or benefit, but for the benefit of all (Marsden, 2003).

The arrival of colonial influence

The Education Act of 1887 defined and controlled educational provision. Under this Education Act, schooling was to be free, secular, and compulsory for all children aged between seven and thirteen, with Māori children given the option of attending state or native schools that had

been established ten years earlier in 1867. The state determined what constituted legitimate school knowledge, how it could be taught and by whom, and how it would be funded. From these circumstances, it is held that two histories of learning and teaching are evident in Aotearoa New Zealand. One is from the Māori cultural environment approach and the other from conscious efforts to assimilate Māori into a working-class culture through compulsory Pākehā educational provision.

According to Belich (2001), there were two methods or forms of early colonisation of Aotearoa New Zealand. The first was of mixed success where by the British sought to convert or conquer the Māori. The second method, the British sought to reproduce their own culture in a new form. As is evident today they were particularly successful with this assimilation method e.g. the non-compulsory status of Te reo Māori in the *New Zealand Curriculum* (NZC). Another is the lack of real explicit commitment to tikanga Māori, kaupapa Māori or te ao Māori evident in the Technology Curriculum. Mead (2003) points out that Government policy of assimilation continued through the Department of Education during the 1930s, with mātauranga Māori (Māori knowledge) and tikanga Māori remaining absent from the school curriculum for over a hundred years. The only exception to this were the Māori schools, where the government allowed some music, dance and Māori arts and crafts to exist while the rest of the country "remained aloof and blissfully unaware of tikanga Māori" (Mead, 2003, p.3). The suppression of tikanga Māori and mātauranga Māori was thought to be necessary to speed up the assimilation of Māori into the ways of the pākehā (Mead, 2006). Paulo Freire asserts in his book *Pedagogy of the Oppressed* that the historic vocation of man is the affirmation of his humanity. Any situation where that affirmation is hindered or stunted is defined by Freire as oppression. The oppressor dominates and dehumanises the oppressed by the technique of manipulation where possible, or violence when necessary (Freire 2005).

Ranginui Walker (1987) describes the nation's maladies as a symptom of having what he calls a "historical amnesia" (p.36). He compares many New Zealanders as having the ability to recognise dehumanising oppression in countries such as South Africa but able to overlook or unable to recognise the two hundred plus years that Māori have been oppressed. Walker (1987) uses the example of the uprising of thousands of people both Māori and Pākehā that protested against the 1981 SpringBok Tour. As a people, many New Zealanders recognised the

nature of the South African oppression demonstrated in their lack of voting rights, incarceration without trial and segregation laws, but many failed to recognise or see the connection to our own reality and that these forms of oppression were part of New Zealand's history. I would say that this is still the case today. Paulo Freire describes a "rightist sectarian" (Freire 2005) as someone who is linked to the past and imagines a "well-behaved present" (Freire 2005). New Zealanders have a world view of themselves as being models of harmonious society. Freire (2005) I believe suggests we may be otherwise mistaken and describes what may be nearer to the truth, "this rightist and this leftist sectarian are both reactionary because, starting from their respectively false views of history, both develop forms of action that negate freedom" (Freire 2005, p.38).

Belich (2001) describes the Māori resistance to, and co-operation with, British colonisation as a great survival story, and in his view, it was remarkable that Māori were not destroyed by it. Booming settler numbers, helped at the crucial moment by a large imperial army, managed to first check, and then to swamp and marginalise Māori. The key points of each of the two approaches mentioned by Belich, conversion and concurring, and or assimilation, focus on there being benefits and disadvantages for Māori learners in being able to live as Māori, while at the same time realising their full potential to learn and apply that learning in the Pākehā world at large. The prominent Māori leader and Statesman from Ngāti Porou, Sir Apirana Ngata was a great example of this. Sorrenson (1996) describes Apirana Ngata as having made a vital contribution to the revival of the Māori race in the early twentieth century by using his knowledge of the Pākehā world and his professional skills to assist his people to develop and farm their land, while also encouraging them to preserve their culture and maintain their own identity. According to Walker, "With the approach of the turn of the century, the time was opportune to take hold of tikanga Pākehā for the improvement of bodily health, homes and the land" (2001, p.84). The Māori cultural environment differed significantly from that of the Colonists. The Māori worldview makes a clear distinction between the two main types of knowledge. 'Kauae Runga' knowledge is esoteric in nature and considered sacred or 'tapu' and would only be passed down to specially selected recipients, usually by way of the wānanga process. 'Kauae Raro' knowledge is more unrestricted and free from the restraints of tapu, and is termed 'noa'. In pre - European times the common knowledge and education system was

largely based around relevance and the immediate needs of the community. It was predominantly subsistence skills centred with emphasis on the important skills such as hunting and gathering, the production and storage of food, the construction and fabrication of housing and clothing, gathering, harvesting and capturing equipment and the knowledge distribution of health needs and protection and training. Although traditionally Māori did have formal learning systems, such as whare wānanga, learning tended to be in a more informal context, occurring as a normal part of daily life, which Joan Metge (1984) describes as "education through exposure"(p. 3). A learning system based around the concept of Expert and Apprentice has been identified however, Māori generally tended to delineate less between the roles of teacher and learner than Pākehā. Learning and knowledge are viewed in a holistic manner where virtues such as respect for the land and its people, hospitality, empathy and kindness are highly valued. Often learning is contextualised in real life situations, although as with Non-Māori systems, there are times when the use of techniques such as rote learning and memorisation are employed. Pākehā learning systems, in comparison, are more structured and formal. They have a predominance for utilising set curriculum and a more regimented classroom situation as the leading context for learning (Metge 1984).

The first exposure to formal European education for Māori was during the early 1800s in schools run by the missionaries. Around 1840 the Government became increasingly involved in the organiation of the education system and developed both a Public State School system that was principally for European children, and a Native Village School system, largely for Māori but staffed by European. These Native Schools were often in remote, isolated areas. The intention was that the European teachers would serve as examples of the European way, which was considered by them to be superior. It became apparent that this imposition of another cultural paradigm did not meet the needs or potential of Māori students and some effort (albeit negligible and almost inconsequential) was made during the 1930s to recognise tribal knowledge and culture through the incorporation of Māori arts and craft into the Native School curriculum. Public Schools were sometimes attended by Māori, however the specific learning needs or potential of Māori were given absolutely no credence within this system. Māori were expected to fully assimilate into the European system, which was not designed to meet their needs nor those of their family or hapū. Neither system allowed Māori to speak

their native language. This dual system operated as recently as 1969, when Native Schools ceased to operate.

Education as a Taonga

According to Metge (1984) knowledge is a taonga (treasure) and understood as a collection of taonga to Māori. Despite the taonga status, historically education in Aotearoa New Zealand has disadvantaged Māori. Government reports such as the 1960 Report of the Department of Māori Affairs, known as the Hunn Report, and the 1962 Report of the Commission on Education in Aotearoa New Zealand, also known as the Currie Report, highlighted the problems facing Māori (Bishop & Glynn, 1999; Openshaw, Lee, & Lee, 1993). The exclusion of language and culture in the education system has culminated in what Walker (1991) describes as near extinction of the Māori language. Recently, Māori have established alternatives to mainstream education that acknowledge the taonga that is education and have revitalised Māori language and culture through te reo Māori (Māori language) immersion schools. These schools are centred on te reo Māori and tikanga Māori. They began with Kōhanga reo (early childhood centres) and then progressed to Kura Kaupapa Māori (Māori medium primary and secondary) and Māori tertiary institutions called Whare Wānanga. According to Smith (1989, as cited in Bishop & Glynn, 1999), these schools have had a positive impact on students and whānau (family) with whānau support and participation in school life being paramount in the success of Māori students. Māori students attending these Kura Kaupapa Māori schools experience improved outcomes, in comparison to Māori who attend mainstream schools.

The New Zealand Technology Curriculum requirements

Technological ideology

When considering bi-cultural approaches to teaching the Technology curriculum, Reinsfield (2018) suggests that the starting point for teachers should be to establish *what* and *how* they can address their students' local learning needs. Whilst I believe what Reinsfield is saying to be important, it is my view and concern that teachers are not allowing for students in particular Māori learners, to identify their aspirations and allow for a 'local' curriculum to be acknowledged and celebrated. This is of paramount importance; unfortunately a bi-cultural approach to delivery of the Technology curriculum is not common practice in New Zealand

secondary schools. It is my view that industrial ideology is the focus and emphasis of the Technology curriculum. The perception of most Technology teachers, is that the potential for student career opportunities is what drives what is important to teach. This approach may serve the "*what*" aspect of the point raised by Reinsfield (2018), however, the "*how*" interpretation of a Teacher of Technology, may not be so well understood by teachers.

Technology - The New Zealand Curriculum

New Zealand Technology curriculum (Ministry of Education, 2007) has three strands, one of these being the Nature of Technology. This is an area of the curriculum that technology teachers find challenging to teach. It is perceived to be too theoretical (Reinsfield, 2018). Pym (n.d.) suggests that in the nature of technology strand, the emphasis is on knowing *why*. Students come to understand technology as an intervening force in the world and learn that technological developments are inevitably influenced by (and influence) historical, social, and cultural events" (Pym, n.d., para. 1).

The scope of the Technology Curriculum and the intention of the nature strand, allows for the inclusion of tikanga Māori to sit in its rightful place and that this should be supported and encouraged. Compton and Harwood (2007) also suggest that "the inclusion of the Nature of Technology [strand] provides opportunity for a broader and an increasingly critical understanding of technology" (p. 2). Compton (2007) sees technology as a "socially embedded human activity" (p. 2), further explaining that "this characteristic means that the social world of culture, politics, and ideologies, together with the natural world, collectively influences technological development and developments" (Compton, 2007, p. 2). Pre-colonial Māori existed in a world where tikanga was a socially embedded activity. However, there is a need to explore whether a focus on the nature of technology strand, can facilitate inclusive practices, through an emphasis on tikanga in teachers' pedagogy. The idea that Reinsfield (2018) suggests is that a localised response to learning will be lined with a need to develop students' technological literacy. From this view, the literature that is tikanga Māori will be the enabler for the success of Māori in Technology classrooms. What is required, is an articulation of a humanistic undertaking and philosophy for technology education. A curriculum that is consistent with this agenda would mean going beyond the prevailing socio-political climate that is so pervasive in New Zealand's secondary schools today (Spendlove, 2008).

What is Technology about?

Technology is said to be "intervention by design" (MoE, 2007, p.32). Early Māori arrivals to Aotearoa New Zealand were required to adapt in order to survive in their new environment.

> The impact of the meeting of Cook and Māori was that they were able
> to trade and were prepared to trade for the sake of finding something
> new that others didn't have and use that technology for the betterment
> of the tribal group.
>
> (D. Lardelli, personal communication, June 11, 2019)

The NZC advocates "the use of practical and intellectual resources to develop products and systems (technological outcomes) that expand human possibilities by addressing needs and realising opportunities" and that "adaptation and innovation are at the heart of technological practice" (MoE, 2007,p.32).

> So the trading of all those hoe (canoe paddles) and taonga (Māori
> treasured technology or everyday property) from Māori tīpuna
> (ancestors) from the Gisborne area led to them having their first contact
> with new technology that they would utilise within the tribes.
>
> (D. Lardelli, personal communication, June 11, 2019)

The ability of the early Māori to construct ocean going vessels and to navigate across vast oceans and then to flourish in a new land of unfamiliar surroundings is evidence enough to prove that Māori have innate ability to experience success from the NZC. Early Māori's adaptation to changes in the weather and the ability to create new technologies and to learn new techniques that allowed them to take advantage of the flora and fauna prior to the arrival of the European settlers (Pākehā). Māori continued to evolve and adapt after the arrival of Pākehā, engaging in the supply of goods and services. Petrie (2007) reveals that "Some Pākehā keenly encouraged Māori to engage in wheat growing, flour milling, and shipping, while others were more ambivalent or even hostile toward Māori commercial pursuits" (p.2).

> Even one of the cloaks or one of the coats that was placed on Te Maro
> (Leader of Ngāti Oneone) became known as a war cloak. So right from

the start the ability to adapt to change was always in the bloodlines because that's why we moved here, we were able to change our direction so we could live in a new land.

(D. Lardelli, personal communication, June 11, 2019)

Māori were quick to learn and adapt to Pākehā Technology, establishing industry and coastal trading companies. Petrie (2007) states that "it is widely recognised that Māori played leading roles in the flour milling and coastal shipping industries" (p.2) during the mid-nineteenth century period.

After Cook the next move was to get our hands on sailing ships. Sailing ships meant we could trade, which meant mills and the trade business out of Tūranga (Gisborne region) into the Coromandel, from Coromandel to Auckland, from Auckland to Sydney.

(D. Lardelli, personal communication, June 11, 2019)

According to the NZC, "Technology is never static. It is influenced by and in turn impacts on the cultural, ethical, environmental, political, and economic conditions of the day" (MoE, 2007,p.32).

If you look at all of that sort of trading mechanism, it leads into the 1840's and people like Raharuhi Rukupo that great carver who utilises steel chisels for the first time and created Te Hau Ki Tūranga and implemented all those technological changes into the artistic movement of the Turanga area.

(D. Lardelli, personal communication, June 11, 2019)

Examples of contemporary Māori architecture and design can be found throughout Aotearoa New Zealand.

After him came his nephew Te Kooti, of the Ringatū faith, who utilised the painted images in his direction, using the Bible that gave you another flourish of colour and creation.

(D. Lardelli, personal communication, June 11, 2019)

None more spectacular than the contemporary example of the house Te Hono ki Hawaiki, in Te Papa Tongarewa.

> That then followed on into the Āpirana Ngata era, which if you look at it, was a step backwards so you could move forward again- a step back in time to grab some of those old images and practices so that we didn't lose them, and then from the Āpirana Ngata era, you moved into the Cliff Whiting era, who was connected to Pene Taiapa, who said to them- 'There is enough room in this world for all of us'.
>
> (D. Lardelli, personal communication, June 11, 2019)

This house in Te Papa Tongarewa, references to the connections that Māori have to Hawaiki, the traditional homeland of Māori.

> So the growth from that initial contact right through to now, you have the masterpiece which is Te Hono ki Hawaiki that Cliff created in Te Papa, and is nothing more than an example of Technology and movement. It's a spring- a spring of creativity.
>
> (D. Lardelli, personal communication, June 11, 2019)

Māori have had to rely on their innovative knowledge and adaptive skills in order to settle, survive and thrive in Aotearoa following the migrations from Hawaiki. It is this historical successful engagement with Technology and the evident self - determination for success that Māori have a right to expect today from the New Zealand Technology Curriculum.

Why study technology?

In answer to this question posed in the NZC Technology document, the following is a review of the aims of the NZC for technology education (MoE, 2007, p.32).

- *Develop a broad technological literacy enabling participation as informed citizens.*

The inclusion of tikanga would broaden the technological literacy of both Māori and Pākehā as secondary school students and as adult citizens of the future.

- *Opportunities to describe the acts of model, product and system development along with practical skills allowing students access to technology related careers.*

Two students that I once taught Technical Drawing to at Gisborne Boys High School went on to assist Dr Cliff Whiting create Te Hono ki Hawaiki in Te Papa Taonga (Meeting House in the National Museum). These students are currently tutoring at Toihoukura (Toihoukura is a unique School for Contemporary Visual Art and Design Māori located in Te Tairawhiti-Gisborne).

- *Students also learn about technology as a field of human activity, experiencing and/or exploring historical and contemporary examples of technology from a variety of contexts.*

Is the success of these two students due to these NZC aims? These two ex-students certainly exemplify outcomes that are signalled, but is their success just a case of chance?

- *A curriculum that is associated with the transformation of energy, information, and materials (MoE, 2007, p.32).*

With Te Hono ki Hawaiki as context for tikanga, it has energy as embodied wairua (spirituality), gifted ancestral information through Māori metaphor in mythological story telling depicted in the objects that make up the visual literacy of the whare (house).

According to the NZC, "Relevant contexts can be as varied as computer game software, food products, worm farming, security systems, costumes and stage props, signage, and taonga" (MoE, 2007, p.32). It is interesting to note the order of these suggested contexts. Taonga (treasure) is listed last inferring a lower value than worm farming?   Does the NZC deliberately aim to exclude or devalue the contribution of te ao Māori from students? A review of the NZC document shows other than apart from this suggestion of cultural inclusion through the making of taonga, there is no supportive guidance for how this can happen. I cannot find explicit examples where the NZC document for Technology, states where the place for tikanga should or could be included.

Technological Literacy (Technological Tikanga?)

Burns (1997) suggests there is a multiplicity of technological literacies "If we accept technology to be comprised of technical, cultural and organisational aspects, then a technologically literate person is one who is able to communicate in a way that is informed by all of these aspects"(p.103). Burns (1997) sees a disparity of access, he further informs us that despite being an essential and compulsory learning area in the NZC, Technology is not equally accessible to females, and that many Māori feel alienated by Western technology. Burns (1997) suggests that the feelings of alienation need to be addressed by way of programme design.

Together with the help of Bruner (1996) explanation of how the mind works, Burns' view of technological literacy is further explained, making way for tikanga. Bruner (1996) describes the "nature of mind" which he calls culturalism, taking inspiration from the fact that through evolution of the mind, that we understand reality to be derived from symbolism (p.3).

Symbolism that is represented as reality and shared by members of a cultural community, is organised through a technical-social way of life and interpreted by the members of that cultural community as reality. "This symbolic mode is not only shared by a community, but conserved, elaborated, and passed on to succeeding generations who, by virtue of this transmission, continue to maintain the culture's identity and way of life" (Bruner, 1996, p.3). It is from this symbolism that a culture's identity can be reflected and represented in the customs and practices that make it unique to that culture. The explanation that Mead (2003) provides, is that tikanga Māori, are the symbolic tools and literacy of Māori. The culture, and its tikanga, is inherent in meaning-making for its members; or as Bruner says, "It is culture that provides the tools for organising and understanding our worlds in communicable ways" (1996, p.3).

Tikanga Māori

Tikanga Māori is described by the Williams Dictionary as Māori customary values and practices. This is only a simplistic shallow explanation of what tikanga Māori is. As a Pākehā it is challenging to delve into the depths of that meaning, but with respect, I will attempt to explain the deeper more meaningful understanding to Māori and non-Māori. Bruner (1996) describes

"The perspectival tenet" to assist us in meaning making. According to Bruner, "Life in culture is, then, an interplay between the versions of the world that people form under its institutional sway and the versions of it that are products of their individual histories" (Bruner, 1996, p.14). This might suggest that in order to understand what something like tikanga Māori means to Māori, Pākehā must first reflect on their own cultural history.

Tikanga and Mainstream Education

This research explores how tikanga and te ao Māori could influence teaching practice to improve the learning outcomes for Māori students. Compton (2007) explains that "through its creation of the made world, technology has a profound and complex influence on the social and natural world" (p. 2). Mead (2016) assists in explaining how teachers who deliberately attempt to incorporate tikanga into their pedagogy are able to do so safely and successfully so that "The observance of the tikanga of creative work actually enhances the activity, gives significance to the work and elevates the activity as something special and highly valued"

(p. 282).

There is a popular understanding for a large number of Māori and Pākehā, that the learning of Te reo Māori is what Māori education is about. According to Penetito (2010), the learning of the language alone is not enough. Penetito (2010) describes his vision for Māori education as requiring a context of intellectual coherence and moral force, and through this context, real conviction, commitment and understanding can emerge. He describes the importance of the recent research into the Waitangi Tribunal claims having made important contributions to the historical knowledge base for Māori and Māori education, and concludes that, "A definition of Māori education must take into account mātauranga Māori, Māori history, Māori stories, and tikanga Māori" (Penetito, 2010, p.59). Until we have, and can experience tikanga Māori being adopted into everyday life as normal commonplace practice, and with the appropriate aspects of the tikanga being adopted as an essential and active part of the New Zealand identity and character, official recognition and validity will not be complete (Metge 1989).

Māori Lore

Mead (2003) describes tikanga as traditions, customs and modes of behaviour handed down to present generations. In the case of the traditions associated with Harakeke (Flax), Mick

Pendergrast who is Pākehā, required the support of Elsdon Best, an early Pākehā recorder of Māori anthropology and history to understand these customs, Pendergrast (1987) suggests, "Sometimes a tradition has an obvious rational basis, and where this is the case, I have given the reason for its observance. In other cases the purpose of the tradition is not so clear" (p.7).

Harakeke weaver and tutor at Toihoukura, Hone Bailey, is proactively rediscovering the tikanga associated with raranga.

> To me it is more about my observance of what I feel is right. I wish to uphold the values and ideals of my ancestors and their observance of the tikanga within their Harakeke work. As there is very little knowledge left in the way of tikanga from our ancestors, I feel that the more or longer that I participate in harakeke work the more I connect with the past and my ancestors.
>
> (Hone Bailey, personal communication, August 5, 2019).

The many faces of Tikanga

Tikanga can be understood in differing ways. Mead (2016) points out that the understanding of tikanga in Te Reo is different to that understood by using English language. There are variations and differences of tikanga amongst Iwi. Due the active suppression by agencies of the crown, conversion to Christianity much knowledge of tikanga has been lost. Educationists and politicians believed that progress and development required Māori to turn away from Māori culture. The suppression of tikanga Māori, mātauranga Māori was thought to be necessary in order to speed up assimilation in Western colonial ways (Mead 2003).

Approaches to tikanga

One approach is to consider tikanga as a means of social control, looked at a way of controlling interpersonal relations and providing ways for groups to meet and interact (Mead 2003). There are many examples of tikanga practice, for example: ngā tikanga o te marae, this is a phrase that covers all aspects of marae protocol: ngā tikanga kōrerorero, this is the protocol or rules governing discussion issues. According to Metge and Kinloch (1978):

Like all tikanga Māori, they are grounded in basic Māori values, laying particular emphasis on respect for the spiritual dimension (expressed in karakia and the observance of tapu), ancestral connections (expressed in whakapapa and whanaungatanga), attachment to the land (whenua), generosity (aroha) and care for others (manaaki ki te tangata), peace (rangimārie) and unity (Kotahitanga). They are neither set out as a code nor formerly taught: they are absorbed by watching and doing (p.9).

It is difficult to imagine any social situation where tikanga Māori has no place. Māori ceremonies relating to life, birth, marriage, sickness and death are often firmly embedded in tikanga Māori. Another way Mead (2003) explains tikanga Māori, is that we can view tikanga Māori as a form of Māori ethics, referring to a "system or philosophy of conduct and principles practised by a person or a group" (Living Webster 1973, as cited in Mead 2003). The word tikanga itself provides the clue that tikanga Māori deals with right and wrong. Tika means 'to be right' and thus tikanga Māori focuses on the correct way of doing something. It involves moral judgements about appropriate ways of behaving and acting in everyday life. In reference to the normative aspects of tikanga Māori, it could be described as a normative system, or that which has processes for correcting and compensating for bad behaviour.

Understanding of tikanga

Mead (2003) provides for me much clarity in his use of the quote provided by the late Eruera Stirling of Te Whānau-a- Apanui, in which he discusses knowledge, and mātauranga Māori as a blessing on your mind, it makes everything clear and guides you to do things the right way … and not a word will be thrown at you by the people" (p.6). According to Mead, Ereura Stirling was talking about the normative aspect of tikanga Māori and its knowledge base, guiding us as a general message to, "Respect the general guidelines of acceptable behaviour as encapsulated in tikanga Māori (2003, p.6). I understand that the body of knowledge originating from Maori ancestors, including the Maori world view, perspectives, creativity and cultural practices, is this normative view, and that this is the basis of tikanga Maori. It is from these understandings that the weaving of tikanga Māori practice and philosophy into the technology curriculum can be introduced to Māori and Pākehā students and be considered as culturally safe and inclusive of Māori learners. Exploring how those teachers who deliberately attempt

to incorporate tikanga into their pedagogy and who do so successfully, requires openness and respect, and for a willingness to be receptive to the understandings of what is mātauranga Māori. In support of this, Mead (2016) champions further support to the view expressed by Eruera Stirling in the way of providing some guidance on how one should make a practical approach to understanding tikanga Māori. Mead suggests:

> A different approach is to look at tikanga Māori as an essential part of mātauranga Māori, or Māori knowledge. In point of fact tikanga Māori cannot be understood without making use of mātauranga Māori. All tikanga Māori are firmly embedded in mātauranga Māori, which might be seen as Māori philosophy as well as Māori knowledge. While mātauranga Māori might be carried in the minds, tikanga Māori puts that knowledge into practice and adds the aspects of correctness and ritual support. People then see tikanga in action, and they do it, feel it, understand it, accept it and feel empowered through experience. Tikanga Māori might be described as Māori philosophy and practice and as the practical face of Māori knowledge (2016, p.8).

The deeper meaning and understanding of tikanga is mātauranga Māori based, however, "Tikanga Maori has become a common term in our world today, but understandings of what it means vary considerably" (Mead 2003, p.2). Mead (2003) provides us with a number of wider meanings for tikanga such as, rule or plan or method or more generally, custom and habit. Mead (2003) further explains that for many people, tikanga Māori means the Māori way or done according to Māori custom. Another set of meanings from Mead (2003) refer to "reason, motive or purpose" (p.11). Whilst these seem on the surface to be straightforward perhaps superficial they belie the deeper more meaningful origin. Mead (2003) speaks of two levels of understanding tikanga. One level being conceptual, which supports and embodies the notion of a set of ideas and beliefs and practices and on another level, tikanga has to deal with practice.

Tullia Wilson (2017) reports, "We thought: What better way to integrate what we do in different subjects than create this whare iti. We wanted to incorporate Māori tikanga into technology and offer students the opportunity to learn the protocol as part of the journey."

Mead (2016) offers many examples that I believe will allow what he described earlier as the practice of tikanga, to see the light of day. Examples of tikanga Māori as a form of Māori ethics are listed below. The examples are ones that are either likely to be found in a mainstream Technology programme of learning or at least in a mainstream programme that embraces bicultural education that incorporates indigenous knowledge. It is worth mentioning here that Mead (2016) reminds us that the underlying principles and values are inescapable in any study of tikanga Māori. To begin with, in order to establish the idea of tikanga, principles of tika (right) and pono (be true), take (issue), utu (reciprocity) and ea (settled) need some unravelling. Bruner (1996) helps in providing an explanation of this concept of the inescapability and central position of culture. From this I believe that Bruner is identifying that the "cultural toolkit" that Māori have developed may be the immutable predispositions known as tikanga (1996, p.14).

Principles and Values

The principles and values that are inherent in tikanga can be best explained or demonstrated by the value of manaakitanga (the process of showing respect, generosity and care for others), or as Mead (2003) suggest, "All Tikanga are underpinned by the high value placed upon manaakitanga-nurturing relationships" (p. 29). Whilst this basic principle of behaviour applies to almost all ceremonies this is not exclusive. Manaakitanga is the tikanga that is described in the "Te Kotahitanga Effective Teaching Profile" (Bishop & Berryman, 2006 p. 273), where students and whānau and the school principals identified relationships and interactions as the major contributor to Māori students educational success.

The Te Kotahitanga research Project provided the opportunity for the voices of Māori students and their whānau (family relatives) to be heard. Much of what has been learnt from this research project centres around a decided lack of tikanga Māori in mainstream New Zealand schools. Whānau of students identified problems with the way anything Māori was perceived in the classroom, "Things Māori are not much in the syllabus. I mean they aren't valued as western stuff is. Māori stuff is studied as something separate. It's not like everyday part of school" (Bishop & Berryman, 2006 p. 136). The whānau voices also expressed a need for whanaungatanga (relationship through shared experiences, working together, a sense of belonging), "They need whanaungatanga. Teachers need to get to know these kids. Get to

know who they are and where they come from" (Bishop & Berryman, 2006 p. 130). Whanaungatanga is a component of the values that are associated with tikanga, "Whanaungatanga embraces whakapapa (genealogy) and focuses upon relationships. Individuals expect to be supported by their relatives near and distant, but the collective group also expects the support and help of its individuals" (Mead, 2003, p. 28). So with this understanding going forward, the teacher is not just the individual in the classroom, but teachers are an interested, ready to support, group of relatives. The tikanga of professional practice of the teacher and the school, should therefore be to make yourself known to the whānau and to get to know them. Teachers and Māori students should treat each other as family members, where there are reciprocal relationships of responsibility, trust, commitment and respect.

Culturally Responsive Pedagogies

Culturalist or Structuralist

There has been a considerable amount written in the domain of Culturally Responsive Pedagogies in recent years, along with an increased awareness of te ao Māori and relatedness to the educational success of Māori.

Mason Durie (2004) wrote about anticipating the future learning environment for Māori. This forecast was made possible through a series of four Hui Taumata Mātauranga (Māori Education Summit). From the first Hui in 2001, a structure to consider 107 recommendations for Māori aspirations for education was produced. These were based around family, Māori language and custom, quality in education, Māori participation in the education sector and the purpose of education. Three goals for Māori in education were established (Durie 2004).

1) to live as Māori

2) to actively participate as citizens of the world

3) enjoy good health and a high standard of living

(p. 2).

The two subsequent Hui Taumata Mātauranga produced outcomes that identified further actions that were hoped could lead to making a difference for future generations. The fourth

Hui Taumata Mātauranga held in 2004, centred on the views of rangatahi (younger generation, youth) mostly secondary school students whose views had been canvassed prior to the hui. To complement and provide further expansion of the themes raised, the views of what factors had been important to young adults and kaumātua and kuia (elders) while they were at school were also considered. The themes raised by all three groups were not dissimilar despite there being some sixty to seventy years spanning the groups. The following five themes were borne out of the inquiries and given particular emphasis:

1) Relationships for learning

That learning did not occur in a vacuum. Three sets of relationships were identified: teachers, peers, and whānau. Supportive helpful environments that were safe for seeking help and raising questions, devoid of Isolation, fear of ridicule and insular thinking were considered as not-compatible with best educational results for Māori. It was also identified that teacher student aspirations must overlap, positive relations maintained and teachers must engage with learners at a personal level whilst maintaining a professional space. Relationships such as these included information transfer that encompassed personal interest and respect (Durie, 2004). This is what Bruner (1996) describes as the classic problem of 'Other Minds', where the teacher may ask "how do I reach the children?" Or by the children as "what's she trying to get at?"(p.45). Peer relationships were important where attitudes towards learning were common- and students wanted to contribute to each other's success. Large classes were seen as a drawback as wide ranges in interest and student learning levels. Whānau were valued by all three generations, good and positive feedback from parents and older whānau members assisted in sustaining effort. Students ultimately agreed that personal commitment and self-motivation might be of greatest significance (Durie, 2004, p. 4).

2) Enthusiasm for learning

Education and learning should be enjoyable. Passionate teachers engender enthusiastic learners. Less emphasis to conformity and completion of curriculum as opposed to understanding the curriculum. Some students prefer relaxed settings, with increased likelihood of success if there is close alignment of cultural values in classrooms and across the school. Milne (2017) suggests that the Ministry of Education has a view that fixing the deficits

of Māori and Pasifika students and whānau requires initiatives like literacy programmes at home and for there to be quiet spaces for homework and reading available. Milne (2017) makes the point that in situations of reciprocity and partnership, Whitestream schools should make an effort to understand the cultural norms, strong oral traditions and the naturally noisy, busy learning environments of large extended families of Māori and Pasifika people. These are the norms that schools could incorporate in order to avoid the deficit view of Māori and Pasifika people of themselves and by others (Milne, 2017).

3) Balanced outcomes for learning

Expectations of teachers were especially important. Some teachers' expectations for Māori were lower than Pākehā and Asian students. This also aligned to lower career expectations. Whānau expectations needed to be encouraging otherwise learners felt less inclined to aim high. Kaumātua viewed success more widely than just national school results.

A way to finding or striving for success and one that is a balanced success, is described by Milne (2017):

> To change the learning experiences and outcomes of children of colour in our education systems we have to name the White spaces in our schools. We have to talk about White privilege and White supremacy without taking these terms personally. We have to ask the hard questions about the purpose of schools, whose knowledge counts, who decides on the norms we expect our youth to strive to achieve, who decides on literacy and numeracy of the holy grail and almost sole indicator of achievement and success? (p.41).

4) Being Māori

Learners felt that fundamental to being successful was being Māori. Kaumātua lamented having to leave their Māori identity at the school gate and being transformed into Pākehā. The opportunity to learn te reo Māori, whakairo, waiata, kapa haka and tikanga was as important as other parts of the curriculum. Cultural confidence goes hand in hand with success in sports, study, and personal development (Durie, 2004, p. 7). Almost one hundred years ago, according to Metge (1967), the Young Māori Party was criticised, appearing to place greater emphasis

on western values than on tikanga Māori. Metge describes Ngāti Parou and Ngāi Tahu as being generally progressive and given to experiment and that tikanga Māori was already an integral part of their lives that it did not need to be reinforced at school (p.61). Metge (1967) informs us that "at a meeting in Te Kuiti in 1920, Sir James Carroll exhorted his people to 'hold fast to your Maoritanga'. He would not define what he meant by saying it was for others to give it hands and give it feet" (p.59). Metge (1967) further informs us that Sir Apirana Ngata helped to give it hands and feet. Sir Apirana Ngata described Māoritanga as:

> an emphasis on such Maori characteristics and such features of traditional Maori culture as present-day circumstances will permit, the inculcation of pride in Maori history and traditions, the retention so far as possible of the old-time ceremonial, the continuous attempt to interpret the Maori point of view to the pakeha in Power
>
> (p. 59).

5) Preparing for the future

Rather than an end in itself, rangatahi, mātua (parents) and kaumātua saw education as a step towards preparation for life. There was agreement amongst the three age groups that a relevance to the future must be factored into education so that Māori learners can take their place in an increasingly competitive world and not only be prepared for full participation in wider society but also be prepared for full participation in te ao Māori (Durie, 2004, p. 7).

In the research project Te Kotahitanga, Bishop and Berryman (2006) utilised three discourse positions:

1) Child and their home

2) School structure

3) Relationships and classroom interaction patterns

Subsequent analysis of students, whānau and teachers narratives contributed to a better understanding of the lived experiences of Māori students' in mainstream classrooms. This lead to improved policy, together with teaching and learning practices, that raised the achievement of Māori students. The first two of the discourse positions were said to be beyond the control

of the Teacher. In chapter 4 of this research document, it is my intention to describe through my personal narrative, whether a teacher can influence at least some of the second discourse (school structure). It is my view that this can be achieved by a way of influencing the nature of the curriculum from within the political systems and structures of the classroom, school by connecting the Nature of Technology strand with te ao Māori, and incorporating tikanga Māori into the technology classroom.

According to Gerzon (1992) and Simon (1993), "Educational professionals and the wider New Zealand community have been slow to acknowledge the importance of culture and cultural differences, as key components in successful learning, particularly with respect to Māori" (as cited in Glynn, 2015, p. 105). Glynn (2015) suggests that teachers need to develop their knowledge of culturally responsive pedagogies, and in particular when teaching students who identify as Māori. The Tātaiako (2011) literature describes the need for a teacher to establish and maintain a student, whānau and iwi relationship that is genuine and productive. The existence of this relationship is the foundation for effective teaching and learning. The Tātaiako descriptors identify cultural competencies for teachers of Māori learners. Tātaiako competencies ask Teachers about what they know of their student's worldview, history and tikanga and how this knowledge is demonstrated in their praxis (MOE, 2011).

Glynn (2015) asserts that we are all New Zealanders and "that Māori and non-Māori have equal educational opportunities" (Glynn, 2015, p. 105). However, an absence of tino rangatiratanga where political control by Māori people over Māori affairs and an evident existence of power imbalance in schools, are two continuing concerns in New Zealand schools. The Ministry of Education have employed a number of strategies aimed at improving the educational success of Māori. For example, Ka Hikitia – Accelerating Success 2013–2017. One of the five guiding principles of Ka Hikitia is that "Identity, language and culture count" (Ministry of Education, 2015, para. 1) – there is the assertion that "students do better in education when what and how they learn builds on what is familiar to them, and reflects and positively reinforces where they come from, what they value and what they already know" (para. 4). There is also the view that students who co-construct their learning, and have connections to tikanga are likely to be more successful in their education, with claims that "Māori students are more likely to achieve when they see themselves, their parents, whānau, hapū, iwi and

community reflected in learning and teaching" (para. 4). Therefore, teachers of technology, who improve their understanding of tikanga, will be more likely to improve their engagement with students who are Māori and thus improve learning outcomes, and become better teachers!

Mead (2016) predicts, "there is every indication that tikanga Māori will become more important in the years to come rather than the reverse" (p.26), and that tikanga is a new area of study with great opportunities for research, and that the body of knowledge that already exists should be disseminated to schools for discussion, debate and action. The findings of Hui Taumata Mātauranga and the fifth theme (preparing for the future) presented by Durie supports the view of Mead (2016), "Once cultural confidence is established, individuals are better prepared to deal with their own futures" (p 249). The transformation of the systems and practices do not occur often in education, change tends to be gradual and incremental (Durie, 2004). Sleeter (2012) contends that neoliberal changes, by discrediting the significance of teacher professional development, just as context, culture, and racism, turn around the enabled, discovering that culturally responsive pedagogy has the potential to bolster. Ladson-Billings (1995 as cited in Sleeter, 2012) proposed three components of culturally relevant pedagogy: holding high scholastic desires and offering suitable help, for example, scaffolding: following up on cultural competence by reshaping the educational program, expanding on the students' knowledge base/assets, and setting up relationships with students and their homes: and developing students basic awareness in regards to control relations.

Is the system broken?

Helping mainstream schools and educators to design and assess their very own criteria for social change has been by and large a troublesome and testing difficulty, and may well keep on being as indicated by Alton-Lee (2003, p.5) who contends that,

> Quality teaching for heterogeneous groups of students, whether by
> ethnicity, socio-economic status of the student's homes, special
> educational needs, language background, gender or other difficulties, is
> a fundamental challenge for New Zealand schooling. For each student

the intersection of social class, ethnicity and gender can markedly influence cultural practices, and prior experiences.

The capacity for mainstream schools and teachers to consider learning circumstances and opportunities to improve the accomplishment and success of Māori students can be fundamentally influenced by the ever increasing assorted variety of needs all students bring to the classroom. Hattie (2003) contends that Aotearoa/New Zealand, as a whole, needs an extensive debate about the purpose of our education system. Hattie (2003) also argues for a re-definition of the purpose for schooling, where teachers, as change agents become not only effective teachers, but also excellent teachers. Alton-Lee (2005) describes a main consideration for sustaining and extending educational reform is to build up a theory of pedagogy that teachers can take to depth. According to Alton-Lee (2005) "Policy makers and practitioners need a pluralist approach to the inclusion of research evidence in syntheses because of the kind of knowledges that are necessary to support sustained education system development"(p.12). This would provide teachers of technology a sustainable method of including tikanga Māori into the activities that relate to student outcomes and their classroom management.

Milne-Ihimaera (2019) contends that changes to the education system in Aotearoa/New Zealand need to come from the ground up and must be supported by those at the top and not the other way round. Milne-Ihimaera believes that the definition of Māori achievement needs to be greater than literacy or numeracy or NCEA (National Certificate Educational Achievement). "Our Māori kids are inherently capable, it's the system that doesn't work – and yet we just keep doing the same dumb s... in schools and expect different results." Milne-Ihimaera (2019, para.8)

Sleeter makes a number of recommendations

Sleeter (2012) makes the following three recommendations that take into consideration the connections among politics, research, and perceptions of culturally responsive pedagogy.

1) A need for evidence-based research that documents culturally responsive pedagogy and student outcomes, not limiting this evidence to only academic performance. This evidence needs to be from scaled up research and be illustrative enough for teachers to use in the

classroom. Evidence that shows that culturally responsive pedagogy is beneficial to non-indigenous /white students.

2) Culturally responsive pedagogy needs to be shared with parents/ whānau, teachers and education leaders and explain what this means and looks like in the classroom by using widely accessible portraits that include video, online resources for teaching about culturally responsive pedagogy to a wider and bigger audience beyond simplistic conceptions of what culturally responsive teaching means.

3) A need to reframe public debate about teaching, especially teaching in diverse and historically underserved communities. It is in the interest of society as a whole to nurture the intellectual talent of its highly diverse population.

Alton-Lee describes a main consideration for sustaining and extending educational reform is to build up a theory of pedagogy that teachers can take to depth. In this way, the theory can provide teachers with an ongoing measure of addressing new demands on their practice. An example might be an explanatory theory that provides a range of ways of exercising classroom management and creating activities that are related to student outcomes. This, Alton-Lee believes, would engender sustainability rather than simply providing teachers with a set of practices they are expected to replicate regardless of content (Alton-Lee, 2006, as cited in Bishop, O'Sullivan & Berryman). The meta-analyses conducted by Hattie aimed to understand the different explanations for student achievement have led him to believe that almost all the things we do in the name of education, have a positive effect on achievement. He notes that not all the effects are equal (Hattie, 2003a, as cited in Bishop, O'Sullivan & Berryman).

Hattie reasoned that it's not the difference in socioeconomic home life that has the greatest effect on Māori educational accomplishment. Rather, he suggests that the evidence is directed more toward the relationships among teachers and Māori students as the greatest circumstance. It involves the cultural relationships and connections with the teacher that makes the biggest difference. These educational differences for Māori, are evident at all levels of socioeconomic status (Bishop, O'Sullivan & Berryman).

Chapter 3

Methodology

Introduction

The use of autoethnography supports my intention to avoid what Ellis and Bochner (2000) describe as the "crisis of confidence" (as cited in Ellis, Adams & Bochner, 2010) in undertaking research that is borne out through my own storytelling and reflexive narratives in ways that are respectful, honest and meaningful. In order to make deeper sense of my experiences, thoughts and feelings I have examined my own 'lived experiences' and critical learning throughout this research.

This dissertation stories the development and capability of a teacher- namely me.

Autoethnography

The positivists search for truth lies in the belief of the need for clear separation between the researcher and the researched so as not to taint the findings of the research, whereas the belief that I share with Dyson and the post-positivitists in the search of truth, is through the acknowledgement of biases and the need for objectivity (Dyson 2007).

The choice of Autoethnography as a methodology for this research enables me to apply a number of the seven lenses described by Dwayne Custer (2014) and in particular with an emphasis to Custer's third lens 'Empathy'. Custer contends: "Autoethnography is a transformative research method because it changes time, requires vulnerability, fosters empathy, embodies creativity and innovation, eliminates boundaries, honours subjectivity, and provides therapeutic benefits" (p.11).

An autoethnographic approach to this research gives me the opportunity to speak from the inside out as a New Zealander, a Pākehā, a teacher, having experienced a deeper understanding of "self" (Ellis 2004, p.34) and the changes that occurred to myself and in my practice along my journey of living and teaching .   My story describes how I took an inward glance at myself as a teacher to really examine what I was doing for Māori, and how this reflectional observation of self has affected a change in my practice, "because I knew

if student learning was to occur in my classroom, I had to take ownership of the investigation of my practices to determine what worked and what did not" (Stinson, 2009, p.2).

Autoethnography is a really hard thing to do. You need to want your story to create conversations. It is not about being self-absorbed, it is self-absorbed to pretend that you are someone outside of what you study, and not impacted by the same forces as others. To not put too finer point on this position of self, and my decision to apply autoethnography, Ellis (2004) states that "it's self-absorbed to mistakenly think that your actions and relationships need no reflexive thought" (p.34).

Autoethnography, as a method of research has enabled me as both the researcher and researched, to participate in a reflexive praxis that is culturally safe and has the potential to influence others to think about and reflect on their own thinking and actions. According to Smith (2012), Māori communities hold a deep distrust and suspicion of research, not just of non-indigenous researchers, but also of the different sets of beliefs that underlie the research process. Smith (2012) continues to explain, "Research methodology is based on the skill of matching the problem with an 'appropriate' set of investigative strategies" (p.175). Autoethnography ensures that it is my narrative, my voice, about my experiences that I am telling, and not the reinterpretation or miss-telling of others, as has often been the case when research of another culture has taken place. Indigenous communities have a fear that is valid, regarding further loss of intellectual property and cultural knowledge. Smith (2005), suggests, "The history of research from many indigenous perspectives is so deeply embedded in colonization that it has been regarded as a tool only for colonization and not as a potential tool for self-determination and development" (p.87). Smith and Rigney (1999) describe changes that they see amongst indigenous researchers that will ward off a "history of exploitation, suspicion, misunderstanding, and prejudice" of indigenous peoples trust (as cited in Smith, 2005, p. 87).

Smith (2005) describes the genealogy of indigenous approaches to research, and how this ancient knowledge of knowing informs modernity and that these approaches have not appeared overnight. Autoethnography is a style of autobiographical writing and qualitative research that explores an individual's unique life experiences in relation to social and cultural institutions. Ellis (2010) in the *Handbook of Autoethnography* describes this powerful

qualitative method eloquently in how she believes that auto biographers often write about "epiphanies" and that these are recalled moments that the researcher believes have significantly changed their lives. As with the intention of this study, I explore my thinking about what it must be like to be Māori in my class. It is that moment in my story, where I am awakened by my awareness or feelings that my praxis within education should be seen through the prism of this new light, in telling my story. The realisation of what it is like to be Māori in my class can be found through reflexive praxis and the use of this transformative methodology Autoethnography. Maso (2001) describes, how in the application of an ethnographic method, an outsider (Pākehā) or cultural stranger, may come to better appreciate and understand a culture that is different from their own (as cited in Ellis, Adams, & Bochner, 2010). It would be through my own narrative that this would be legitimised. Dyson, (2007), explains that "With this understanding of narrative in mind I began to recognise that the knowledge, which I was constructing - through my own experiences, encounters and interactions with the world - was legitimate" (p. 37).

Therefore I believe that the use of Autoethnography as a research method is a culturally safe method for telling my story whilst sharing in the lives of others. It is for this reason that I choose autoethnography.

Kaupapa Māori research

Although my research methodology is not borne out of Kaupapa Māori research methodology, this project seeks to edify an understanding of self by way of what Heshusius (1994) identifies as "kinship between ourselves and other" (as cited in Bishop, 1995 p. 147). This form of knowing is as Bishop (1995) describes, one that is based on whanaungatanga (kinship), one of the most fundamental ideas within Māori culture both as a value and as a social process. This research respectfully acknowledges an indigenous, specifically Māori worldview and this respect is used as the foundation for the telling of the understandings from a non-indigenous lens that describe the people and their relationships and interactions in New Zealand secondary schools. During the writing of this research, I have been very fortunate to have been embraced, supported and enlightened by the whānau of Toihoukura. This concept of kinship is further explained that to use the term whānau is to identify a series of rights and responsibilities, commitments and obligations, and supports that are fundamental to the

collectivity. "These are the tikanga of the whānau and to being whānau, and the tikanga of Toihoukura" (D. Lardelli, personal communication, September 14, 2019). These tikanga are described as warm and interpersonal interactions, having the solidarity of the group with responsibility for one and other that is shared, and having a cheerful co-operative objective for the collective benefit with a corporate responsibility for group property be that material or non-material such as knowledge and for items and issues. "You are whānau Ben, you are part of the history of Toihoukura" (Ayson Lewis, Toihoukura Tutor, personal communication, April 10, 2019).

These Toihoukura tikanga are effectively the same as the attributes that Bishop (1995) sums up in the words aroha (love), manaaki (support) and tiaki (to guard) (Metge, 1990, as cited in Bishop, 1995). Through the practice of aroha, maanaki and tiaki and as a result of the sense-making of the concepts that Bishop and Heshusius provides in explanation, I find myself in an advantaged position during this research in finding the answer to what I seek as alluded to in the title of this dissertation- 'Looking for the Tikanga in Technology Education'. This privileged opportunity has allowed me to engage in rich and deeply meaningful discussions that have helped clarify my reflexive lens in pursuit of the concept of whānau and whanaungatanga in a mainstream classroom and the acknowledgement and enactment of whānau tikanga, within my teaching praxis. The decision to seek alternative support in completing this research and the need to situate myself in Toihoukura while carrying out this reflective journey of self-discovery, is grounded in my belief of the need to avoid conventional coloniser's research practices (Kemmis & McTaggart, 2000, as cited in Berryman, SooHoo & Nevin, 2013). Taking once again from Heshusius and referring to the idea of shared kinship, as mentioned earlier, I am not Māori, and therefore were I to attempt to participate in Kaupapa Māori methodology research, I would not be in support of my Toihoukura whānau or other Māori for that matter. Instead, I would be at risk of reinforcing the hegemonies of the Pākehā as opposed to deconstructing them (Bishop, 1996, as cited in Berryman, SooHoo & Nevin 2013).

Reflexivity through the use of two Metaphor

I use 'Design Thinking' as the first metaphor for applying and organising my reflexivity so that I am evaluating the thinking within the design decision-making. The use of the second metaphor, Rauru Rua or Koringoringo (double spiral- toi whakairo carving) design, will

systematically be used to illustrate knowledge construction, meaning, and sense-making by way of the Autoethnographic narrative. The metaphor Rauru tahi (one) and Rauru rua (two) demonstrates my professional journey and personal growth in understanding of Māori tikanga and te Ao Māori.

Metaphor 1. The Design Thinking.

'Design Thinking' is used in design technology education and is viewed as heuristic. This approach to 'hands on' problem solving or self-discovery of design solutions relies on a practical method. The pedagogy of how knowledge and skills are imparted in this educational setting, is through the use of metaphor that aims to help organise the thinking required to evaluate a problem or stakeholders issue and or tackle design problems through to a solution (Casakin, 2006). The Design Thinking process for this research (refer Figure.1) has five sequential stages with each stage returning back on itself in a reflexive spiral of re-evaluation of each design stage idea. According to Hoefnagels et al (2004), "The design process is a metaphor itself… the design process would become a focus for metaphors to help create boundaries, as well as to comprehend and to reason about" as cited in Saffer, 2005, p. 12).
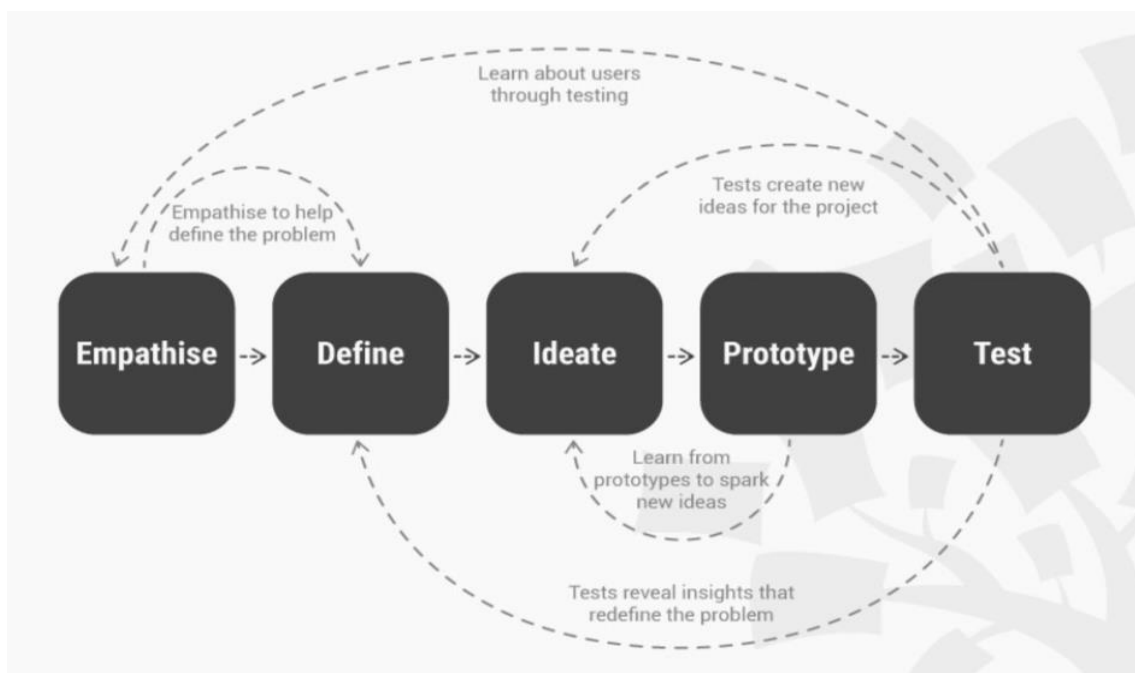

Figure 1   Metaphor- The Design Thinking

 Rikke Dam and Teo Yu Siang and Interaction Design Foundation.

The five-stage Design Thinking model systematises and identifies the stages carried out in a technology project. Beginning with an empathy of understanding for the requirements of the client. Then following through the stages to the completed prototype testing stage. When moving through each stage, a designer can equivocate each decision and return to a previous idea or stage in the process until satisfied that the design will meet the client's needs. The use of this metaphor is modelled in Chapter 4.

Design technology has many generic aspects, and is not unlike other subject areas where the humanistic teacher and learner value meaningful learning. Compton (2007) supports us to understand that technology is a social and political activity. One of the favourable aspects of teaching design technology is that this range of many generic aspects, allows the agentic teacher to be the learner and vice versa where this humanistic teacher and learner both value meaningful learning.

Metaphor 2. Rauru Spiral

The use of the Rauru Toi Whakairo Spiral as a Māori metaphor for searching for truth, will help focus the story telling and support boundaries based on respect, as well as to comprehend and to make sense of the narrative.

The Rauru spiral exemplifies reflective praxis and describes the constant returning to the work just undertaken in a way that at each turn of the spiral, one returns to pass the point from where one has just been. The separation of Ranginui and Papatūānuku created Te Wehenga, the spaces of darkness and light. In toi whakairo (the art of carving) this is explained as the positive and the negative, with the space in between, as the learning space, the place to find new knowledge.

The spiral is a metaphor for the extension of whakapapa- the whenua. The coil of the umbilical cord, one end connected to the mother (Rauru) and the other end connected to the child (Pito) with the middle section called the Iho (essence or embodiment). Kapu (small cup shapes) are often added to the Rauru design signifying new knowledge. In Te Tairawhiti and the East Coast of Aotearoa, the Rauru is seen situated on the shoulders and hips of carvings, signifying connections and inter-connectedness of whakapapa. The tikanga is about keeping things in

balance; the power, the knowledge and the relationships (Ayson Lewis, Whakairo tutor Toihoukura, personal communication, August 1, 2019).

Metaphor- The Rauru

Chapter 4

Narratives / Findings

Introduction

In this chapter I tell my story, beginning with my subjectivity statement, which locates me in a personal narrative. My findings are told through the use of these narratives alongside my sense making, the Rauru spiral metaphor. The narrative stories share my critical consciousness. They are my own direct reflections, recorded in italicised writing and used to consider my praxis more reflexively. Where permission has been granted, people's names are used, some are in public figures and their names and acts are in the public domain otherwise names used are pseudonym. I begin by adapting a narrative format utilised by Snedden, (2005) to assist in locating myself in this research.

> *As Pākehā, I claim my belonging here in Aotearoa through having descended from Wilhelmus Gheradus Bernardus Knoef and Maria Elizabeth Twaalfhoven, settlers from the Netherlands who agreed with the Treaty. The same Treaty that, by joint agreement of tangata whenua (local people) and tauiwi (non-Māori), gives all subsequent migrants (my parents) and their communities (my siblings and their children) the right to call this place my home. The importance of this cannot be understated as I do not have any other home. It was the Māori Land Court Chief Judge Eddie Durie who in 1990 first described Pākehā as Tangata Tiriti- those who belong to the land by right of the Treaty. This is my unimpeachable security, my right to belong, passed from generation to generation.*

My parents met in New Zealand having emigrated from Holland in the early 50's. As a white skinned child, I could assimilate quite easily into this English speaking world of British cultural norms, even though these were somewhat foreign to me. We never had roast dinners on Sunday, my dad didn't go to the pub, and he didn't watch me play rugby, and we never went to the races. We spoke Dutch at home and we ate basic Dutch food. My mum was extremely frugal and talented at this. I once got shamed at school for having homemade underpants. I

worked really hard at being the same, I worked really hard at not being different. To add to this, I often felt that I had a father that was thought of as an embarrassment. My mum once said to me that you have a good father, and that some fathers are drunks and others are in jail, yours is just sick. Think of it like a broken leg and he has to go to hospital, we all have our crosses to bear. My mum died at 47. I have from an early age, always believed that to treat everyone as equal, the same, is the tika (right) thing to do.

Personal subjectivity statement – What did I learn about and from?

Growing up in Wainuiomata and origins of deficit theories.

Trevor Mallard, the speaker of the House of Representatives, once proudly claimed that being a Boy from Wainuiomata made him indigenous. I am a boy from Wainuiomata, I'm probably about the same age as Trevor, but I do not claim indigeneity through my historical connection to the town where I grew up. This statement probably says more about Trevor's self-deprivation and deficit view of people from Wainuiomata than anything else. It probably feels like some sort of badge of honour to him which you gain by virtue of your survival in this working class dormitory town where lots of Māori live. Whenever I deliver my mihi or pepeha, I always mihi back to Wainuiomata, my maunga, Orongorongo and my awa, Wainuiomata. I am proud of it. And no, I don't feel a stranger in my own land. I am perhaps lucky on that score as I am very comfortable in my own skin of Dutch descent, in amongst others who are maybe not so lucky but who are in a brown skin, that I do at times envy.

My older sister and I used to sit outside in our backyard in the evening listening to the music of guitar playing and singing and laughter coming from the Walker's – next door but one, neighbour. We were excited by the energy that flowed regularly from their back yard, especially around Christmas. Smoke, together with the smells that emanated from the freshly lifted hangi, would drift over the big black dividing fence, we were envious of the sense of ease of their regular celebrations. As a boy scout it was great for knowing where to target the next up and coming bottle drive fund raising. I was friends with Steven Walker, he was about my age, but only once did I get to visit inside his house. It was cold and had no carpet or much wall paper. Steve's dad, Mr Walker was always under old cars that he had lined up in bits on the

driveway. Mrs Walker was kind and warm hearted to me, she would give me and Steven biscuits from a packet and we would sit on their back step and eat them. That was a treat for me as my mum made all our biscuits.

My dad's strong Calvinist based Dutch values and assimilationist induced opinion of Māori was audible in his disparaging remarks at the frequency of all these all night parties. Dad worked in a Lower Hutt factory with lots of Brits, Māori and later on Polynesian Islanders. He was quick with his staunch judgmental views on the regularity of parties at the Walker's, and the vast consumptions of alcohol. I don't think I shared his view as a small boy growing up in Wainui and certainly not later as a teenager, but I do recall the feeling of envy at the obvious fun and laughter that the Walker's house was always having. All our near neighbours' houses backed onto a system of open drains. Ours was one of the many that were dug to drain the swamp that Wainuiomata was built on. These drains were our playground, they were the commons, and were always a good short cut. The eels in the creeks didn't stand a chance.

The Parone's lived over the back, next door to the Williamses. Then every weekend, regular as clockwork after closing time, Mr Parone versus Mrs Parone shouting matches began. This would lead to fighting, with door, slamming and window glass smashing. This always left me feeling a bit frightened as the violence reached a crescendo of screaming and shouting and then as suddenly as it started, dead silence, signalling time for me to climb down from my 'nosey parker' vantage point and to climb back into my window and back to bed.

Mrs Williams, next door to the Parone's, once charged into our house chasing my brother and his mate around our kitchen table, scattering the chairs as she went. Mrs Williams was a wee bit pōrangi (mentally unwell). How do I know this? Because we visited her one time when we were visiting our dad at Porirua Mental Hospital. Going to visit dad, unless we were left at one of the neighbours, was a regular occurrence for us kids growing up. We would usually go on Sundays but only after dad had been there for a couple of months and he was allowed to have visitors. Mrs Williams was for a short time, my Māori language teacher, and 'rolled up newspaper' Māori rākau (stick) games teacher. She would be invited into our primary school classroom to teach us to sing songs in Māori and to show us how to throw, in sort of coordinated rhythm, rolled up newspaper in groups of four or two, while singing Māori songs.

I enjoyed this and was sad to hear Sister Teresa, our teacher, tell us that Mrs Williams wasn't coming back.

Right next door to our house was the Karaka's. Mum really got on well with Bronwyn Karaka, she used to look after us over at her place when mum had to go to out and we weren't allowed to go. Bronwyn was real kind when this happened and she spoiled us with nice treats even though Bronwyn was a solo mum and had lots of kids. Mum said she came from 'up the coast', I didn't know what that meant.

Next to us on the other side was the Crawford's. They were very quiet people and real nice to us. We also went to their place to stay while mum was 'busy'. On at least a couple of occasions the Crawford's had big hangi parties in their shed. They took their two cars and all the stuff out of the shed and set up trestle tables and we had a big sit down kai after some big speeches. Mr Bill Crawford worked in Wellington in an office. We thought that he was important. I have since come to know that Bill was the Deputy Secretary of Māori Affairs and Director of the Māori Development Cooperation and a Nuffield scholar. That's pretty important!

What is important for me is recognising that like Trevor Mallard, I too have held deficit views of others and as described above have as a teacher identified where these have come from and how my childhood has influenced my view. In their Effective Teaching Profile (ETP), Bishop and Berryman (2009) suggest

> " to put it simply, if we think of others as having deficiencies, then our actions will tend to follow this thinking, and the relations we develop and interactions we have with these people will tend to be negative and unproductive" (p.29).

My actions as a teacher, a parent, or whoever I am at any time, are driven by the mental images or understandings that I have of other people (Bishop & Berryman 2009). This is particularly true in the judgement of others with difference.

Te Rauru Tahi - The Spiral – How did I learn about including tikanga Māori?

"I am ashamed, have feelings of guilt, and are angered and annoyed. There is much light throughout my rauru, I am learning a lot but there is much to learn".

Gisborne Boys High School Hall and Caning

As a technology teacher there had been little or no tikanga or cultural dimension to my teaching practice. My first permanent teaching appointment was at Gisborne Boys High School where 65% of the students were Māori but unfortunately 95% of the staff were not and deficit theorising of both Māori students and staff was rife, it was the norm. While reflecting on this time in my first teaching position, I concede that I was a contributor to the data that Alton-Lee (2012) reveals on "New Zealand's second-lowest rating for student safety out of 35 countries and the analyses showing Māori boys and Pasifika students to be least safe" (p. 36). How does a young new teacher survive in a new school? Assimilation of course! There was no room for critical consciousness. Albeit it troubled me greatly.

One day early on, I was upstairs in the staff work room, "Mr Knoef, I'm sorry to disturb you, but would you mind if I bring these three boys in, I need to cane them and you can be my witness". "Ahh….."(hesitation), "sorry ahh……, yes I do mind".

The Caning Master promptly marched out of the room scowling at me and muttering to himself. Off he went in an attempt to fetch another candidate as his witness. I spoke briefly with the three boys who were Māori, about why they were being caned. They had been "up town getting a feed sir". "Did you skip breakfast? Or was there no food at home this morning? "Aww no sir, we had to get up early and go and help

my dad set up the melon harvester in the fields for work'' explained two
of them, and the other boy said there was not much to eat at home this
morning and he was "hungry as!" "So after the registration bell, we all
shot up town cos I had some money and they didn't".

The Caning Master having found a witness, (the office lady), proceeded
to cane the boys as I left the room - quickly trying to leave before he got
started and in the hope that I couldn't hear the strikes, thus distancing
myself from responsibility.

I felt disgusted, sick, and annoyed at myself for not speaking up, sticking
up for the boys. Failing to do what was right- "mahia te mea tika"
(challenging what is right) (Paenga, 2017, p. 45). *I was discovering my*
critical consciousness.

I assisted the teacher of Te Reo and Māori Art, Derek Lardelli and his class group of Māori students, which included the three caned students. Together over the next term, we transformed the school assembly hall into a space that now reflects the bicultural nature of the school. This was my first tikanga Māori project. Many of the students from this class became the foundation art students of Toihoukura. The stock standard assembly hall with black and white photos, gold leaf honours board and shiny glass cabinets filled with silver trinkets, was transformed into what now fully represents the students past and present, in a bicultural, decolonised way that was not evident before. It is an artistic master piece, a story telling of whakapapa and an expression of what it means to be Māori, and a truthful representation of what it should mean to have journeyed through this institution. This artwork is symbolic, as it represents a decolonising of mind (Ngũgĩ, 2011), as the works sit alongside the representations of colonial metaphors and language. Through this epiphany project, and playing rugby together with Derek for YMP (Young Māori Party), we have become brothers and lifelong friends. Dwayne Custer (2014) in his work-'Autoethnography as a Transformative Research Method' describes how we can write 'about our thinking about our thinking around being in this world' as if we were looking at our reflection in the mirror.

I have gained a foot hold on knowing about the world that Derek resides in "We find a common frame of reference with strangers because we are able to put ourselves in their situation" (Custer, 2014, p.5). I owe a great debt to these students and Derek, my teachers. They invited me in to learn their tikanga. I am grateful to those three boys for their forgiveness of my weakness. Their tikanga that is whanaungatanga (relationships) manakitanga (hospitality) kotahitanga (unity) Te whakaute (respect) rangatiratanga (self-determination) mohiotanga (knowing) maramatanga (understanding) tuakana teina (scaffolding and supporting learners with expert learners) kaitiakitanga (guardianship) whakapapa (lineage and identity) wairua (spirituality) mauri (life-force).

The most important thing for me, has been to access and learn those Māori customs of relativity – relating to the land, those people around you, and those who have passed.

I feel really challenged in my journey to re-learn my subjectivity in this world. The patience and tuakana teina approach of the students towards my learning, the artful method of Derek's delivery, clearly with the objective to help his learners (myself included) to construct, and to own, what it means to be Māori and for me to be included and able to be with Māori who know what it really means to be and live as Māori. When discussing this with Derek, I ask about what it means to be Māori and how one comes to understand tikanga? Derek's reply was "You won't get to know that by reading or writing books!"…. "And to own these meanings as a Māori you need to do more than simply to manage and deliver Māori information" (D. Lardelli, personal communication, May 12, 2019). Bruner explains that meaning-making, requires an understanding of the ways of one's culture, and through the eye of "The perspectival tenet" (Bruner, 1996, p.13), I feel blessed, having got the opportunity to feel this frame of reference provided by Bruner and guided by Derek first hand, and to have been invited in to do so.

Te Rauru Rua- The Dual Spiral - In what ways did these experiences contribute to my understandings of Te Ao Māori and how this might support other teachers of technology?

There is now less light throughout what is now Te Rauru Rua. I have learnt a lot, and it is better to share as there is still much to learn.

I feel especially challenged as my journey in re-learning my subjectivity in the world as an outsider, but one who has been chosen (metaphorically) to be a standard bearer for outsiders who wish to look inside their own praxis. In the day to day demands of the production of education, we seldom get the chance to pause and look beneath the rhetoric to better understand our own praxis.

Te Whare Iti o Te Ako

At my new school, I ask the 'how would I feel if I were them' question often, as I try my best to provide learning opportunities that are rewarding, enjoyable and meaningful. I actually make a point of catching myself treating them all the same. But they are not the same - that's just assimilation ongoing, all over again! I've got to do better than that. Just because I think they want to be the same or at least that's what it appears outwardly to be to me, it's what they have learned for survival, or have been taught to think. They are not the same, and I am just perpetuating the myth. How does it feel to be Māori in my class?

I now understand that my "conscientisation" (Freire, 2005, p.35) is a gradual process and that this is about being able to bring about personal, social and professional transformation starting with myself.

There are not many Māori at Golden Bay High School (GBHS). It is hard to see the 14% Māori that the school roll informs us there are. Most, certainly don't look Māori and 23% of the Māori at GBHS have not identified their Iwi on their school records (Kamar 2019). This knowledge has probably been 'assimilated' out of them and their parents years ago. According to the 2006 census, a total of 102,366 people (15.9%) of Māori descent did not know their iwi (Statistics NZ, 2007).

> *When I looked closely at the times that I felt good, reflecting on the moments I was happy, the school mornings I woke with energy and passion. I began to work out what inspired me and helped me feel good- I had started listening, paying attention to-my inner voice- I had re-found my way in the Rauru. I had been reading stuff but was not acting on it, I was harbouring ideas that I was not acting on….. Ideas that I as a Pākehā of Dutch decent could make a difference, be allowed to try… I also had feelings of frustrations towards my Māori colleague… Why was she not doing this? Access to the ideas and method of cultural responsive practice wasn't an issue for me, I thought I had access to all the support and information on what it is to practice as a culturally responsive practitioner that I needed; all that I could handle; more than I could handle actually! If anything, the amount of information was somewhat overwhelming and this had become confusing, or as my tuakana Derek Lardelli would say, I had become "lost in the Rauru".*

Derek Lardelli describes that to be lost in the Rauru can be a dangerous place to be. The space where confusion can take control of our thinking processes, where it can be an entanglement of our wairua (spirituality).

It can seem contradictory, and all this 'Māori stuff' was also in danger of just becoming yet another directive 'ism' as in 'bi-culturalism'. It needed to resonate with me. The school was undergoing a severe stress test. We were working under a Minister appointed Commissioner at this time, with an emphasis on equity in education presented by the departing Principal. It needed to be managed in a genuine way (Wilson, 2017). It was classic, it was staring me in the face.

The 2017 Education Review Office report identified these areas of serious concern.

Area for review and development:

In consultation with whānau and Māori students, the board, school leaders and teachers should develop a more formalised approach to promoting positive educational outcomes for Māori, as Māori. This could include:

- using the school's useful taha Māori policy as a foundation for development and review

- identifying and enacting goals and priorities for development and improvement

- regularly evaluating and reporting progress against these goals to the board and school community.

(Education Review Office 2017)

Staff were running out the door, it was a case of evacuate the sinking ship! The captains running amok! I stood my ground and buried myself in my work.

> *The 'top down', tack on, do this for appraisal 'hoop jumping' tick box was not going to happen for me anymore. I couldn't pretend to wait for someone to come along and deliver the 'silver bullet' PL (Professional Learning) session where I was going to overcome my malaise, my lack of confidence in my leadership. I was going to have to be the change agent- stop avoiding the use of my power, my agency, and take responsibility.*
>
> *Stop waiting to be told or to be given permission.*

Being pro Māori in a Pākehā school can be a lonely place - there are few genuine allies.

> *I was going to have to man up, and together, with all my 'resources', and in particular the students, begin to give 'them' a better deal. I had to do the mahi (work), I had to make the change in me, and I had to start somewhere…. Discovering my "why" was the single most important step that I took in clarifying my values and rediscovering the kind of teacher I*

wanted to be. I felt really challenged to re-learn my subjectivity in the world and further develop my critical consciousness. As I turned through my Rauru and passed the curves that I had previously travelled I could see the light in the learning space.

Tuesday, Period 1, Year 12 and 13 Building and Construction (Composite Year 10 and Year 12)

Empathy. "Come on you lot, we are going for a walk this morning to check out a job" Fourteen of us signed out at the office and walked the short distance up town to Golden Kids Early Learning Centre (GKELC). Following Saffer's design process, beginning with empathy we listened to the Kaiako (Head Teacher) introduce us, and explain to the little children why we had come. Big kids with little kids proved exciting for everyone! We listened to the littlies tell the biggies what they thought they wanted in a whare and why they thought they needed one. It was tuakana teina in reverse. I had deliberately not told my students beforehand what the project was going to be - I wanted them to have an untarnished conceptual blank canvas of design needs, and also to avoid what I had predicted the 'cultural avoidance' pushback response that I had been challenged with before. It didn't come!

The following are three of the standards that were part of the project coursework for the senior students in this class.

1) Unit Standard 24358 Plan and monitor the construction of a BCATS project, and quality check the product.

2) Unit Standard 12936 Construct a non-consent timber framed utility building.

3) Achievement Standard 91344 Implement advanced procedures using resistant materials to make a specified product with special features.

To successfully achieve these standards, students had to maintain an open communication experience with a client as described in the Design Thinking Process in chapter 3. This was also my way of engaging them with the stakeholder community of Golden Kids directly and for my students not to rely on me to be the sole conduit.

It was immediately obvious that these GKELC littlies were ahead of the game. They had been listening to their kaiako and knew what they wanted – Māori designs and pictures they all

thought; pictures of fish and shells said one little girl; a dolphin and whale said another; a place to go if it rains said a small boy; a picture of a taniwha (water spirit, monster) in the water said another; it has to fit in that space there, up against the fence, said the kaiako. As we left the kaiako said 'it needs to be safe, nothing sharp and make sure they can't climb up on it and then climb over the fence. 'Early Childhood Centres have to meet regulations- like your school'. My students took notes, talked and drew sketches / pictures, all the time gaining a sense of empathy, as they sat on the floor together amongst the littlies. Brunner (1996) states the importance of narrative as an instrument of meaning making. It very quickly became apparent to me that the kaiako and all her staff and children were on the same cultural learning journey as my students and me!

Define. The students identified early, that in order to improve their agency, they needed to have more information that will help to focus the design challenge. A clear definition of what is known about the project was drawn up in what Dam and Siang (2017) describe as a Point of View table (POV). As new design information becomes known, this is then added to the table. This gave us a developing depth of understanding and empathy for what the potential design solution would contain. See below Table 1.

Point of View Table		
User	Need	Insight
Golden Kids Early Learning Centre- Tamariki, (children) (7-10 at a time) Whānau, Kaiako, Koro and Kuia (Iwi elders)	Opportunities to practice the 5 competencies of Tātaiako Ako Whanaungatanga Tangata Whenuatanga Wānanga Manaakitanga	Build a Whare Iti based on the legend of Tangaroa. The Whare will provide students and staff an opportunity to learn more about Māori culture. The use of the Whare will assist in promoting genuine, productive relationships among teachers and their Māori students, whānau, iwi and wider communities as these are vital foundations for effective teaching and learning.

Table 1.

At this stage what we knew for certain was the house's maximum size and that it had to be weatherproof and safe. So the builders (four students) got started with framing a floor and walls.

As a class group, we visited our local Marae. At the Marae, kaumātua (elders) advised us that we needed a deeper understanding (whakapapa) of the specific users, their histories, their needs and the most essential insights (whanaungatanga) about them. According to Dam and Siang, one of the most important steps in the Design Thinking Process is to define the design challenge (2017). On returning from the Marae we invited the Golden Kids whānau to visit us at our school. GKELC held their monthly Board meeting in our school workshop. This gave us an opportunity to show manaakitanga (hospitality, respect) towards them and to show the structural construction progress and the developing design information that we had gathered so far. GKELC have 12.5% of their students that identify as Māori. They as a school community have recently embraced the challenge of making improvements to include the "five competencies of Tātaiako" from the Cultural Competencies for Teachers of Māori Learners (Education Council New Zealand, 2011). A parent on the board shared a very heartfelt story of growing up without learning her history or her language. We learnt many more pertinent things including that the Whare Iti would embody the pūrākau (story) of Tangaroa (one of the sons of Ranginui and Papatūānuku).

Ideate. At this third stage, with the use of the POV table we explored the notion that culture has a reciprocal relationship with Technology (Pacey, 2001). The students together with the support of the wider GKELC whanau group, were involved in focussing on the potential design solutions that had become clearer as a result of developing a strong relationship with them. This was achieved by establishing a sense of whanaungatanga, a sense of 'culture in common', joining us together as a community, "giving a common framework of meaning" (Quest Rapuara, 1992, p. 7) within the GBHS student group (design team) and the wider GKELC community. Many of my students had attended GKELC, they had siblings attending, parents were past pupils of mine, and a number of the teachers were past pupils of GBHS. The students' engagement was driven by a personal sense of loyalty- the strength of which can be described as manaaki (to support, take care of, give hospitality to, protect, look out for, show respect, generosity and care for others), a sense that what my students were embarking on

was real and meaningful. Our mutual enthusiasm for the task, supported my exuberance, and this brought a sense of what is tika (right) and pono (be true, valid, honest, genuine, sincere).

> *I felt a tremendous sense of purpose, a sense of self-worth. The system is not set up to celebrate the teachers or students of technology, it's like getting the 'most improved' award. Technology is not ranked up there like maths, English and chemistry. I often feel undervalued, not getting what I would call recognition, the 'open' rewarding recognition from the management or from the parent or even sometimes from the self-centred adolescent student. I have learnt that this recompense is not to be expected. "How many technology teachers have gone on to be Principals? I think that in all my years of teaching I have taught, only one of the senior students in their senior year who went on to be Dux. I have learnt that I need to value what I do myself, and that a student needs to value what they do in Technology for themselves, - and now in this class they are more than ever! This is why I am feeling really good at this stage of the project - I have found my way in the Rauru, there is light and I am learning lots, I am agentic and the students are too. I have learnt that like a Marae - the back room potato peelers, butchers, and kaimoana (sea-food) gatherers hold the mana (supernatural force, respect) of the people as much as the thespians on the Paepae (Orators' bench). Mana cannot be bestowed upon you, it comes from within you.*

> *As my chisel follows the line of the Rauru I pass the previous curve - the knowledge, the tikanga that I, we, have learnt. It is here where I cut in a kapu to mark this new knowledge.*

Prototype This stage of the design process is what all the students really look forward to - the making, constructing, 'the doing stuff'. The Whare Iti project has many connected parts. Although only a small house, it is a large project because it contains almost all the constituent parts of a full size wharenui (meeting house). It is a dynamic integrated project with two other learning areas now involved. The following table number 2 outlines the What, Who and How of the making process for most of the tasks.

Prototype task	Distribution	Instructional method
Whare - House, Building and Construction team	Year 12 Building and construction (8 boys on rotation)	Didactic with pūkenga (specialist) retired Tradesman parent helper
Toi Whakairo – Carvings (six on end wall) representations of 6 sea creatures of Tangaroa- ancestor deity of the sea	Year 10 Technology & Māori (6 boys)	Individual carvings but Joint productive activity kanohi ki te kanohi (face to face) with pūkenga
Kowhaiwhai -12 painted panels scroll ornamentation	Year 9 &10 Māori (16 girls & boys)	Joint productive activity ngā wānanga
Tukutuku panels- woven wall panels (7 panels)	Year 10 Technology & Māori (10 girls)	Joint productive activity with pūkenga ngā wānanga
Tangaroa wall painting, 3 panels thematic front and back	Year 10 Māori & Art (3 girls)	Joint but individual productive activity
Art works with kupu- paintings to learn words describing sea creatures and local sea related stories	Year 9 & 10 Māori & Art (12 girls & boys) Year 7&8 Tuakana/teina- big sister/big brother mentoring	Joint productive activity kanohi ki te kanohi (face to face) ngā wānanga tangata whenua (learning conversations with our Iwi)
Maihi kowhiwhi- Gable end barge boards design from Ruatepupuke (house from Tokomaru Bay, a descendant of Tangaroa)	Year 12 & 10 Technology (4 girls & boys) Tuakana/teina- big sister/big brother mentoring	Ko ngā kete o te wānanga i tīkina e Tāne i a Io-matua (kits of knowledge that Tāne fetched from Io the-parent). Ako torowhānui (holistic learning)
Tekoteko te Rā - Gable top figure representative of te Rā the Sun of Golden Bay	Year 12 Building (2 boys)	Joint productive activity ngā wānanga tangata whenua
Pare- Door lintel	Year 10 Technology & Māori (2 boys)	Joint productive activity

Table 2

Many of my Technology students also study Māori as a full course subject (these programmes focus on te reo (language) and Māoritanga (Māori culture, Māori practices and beliefs). Many also study Art. A number of students request permission to continue with the Whare Iti project during their spare time and if given permission, to also excuse themselves from other lessons.

> *This project is getting very big. It's not just a play house for the Kindy! I wish those dumb teachers would stop calling it that. It has a wairua, it has real meaning, what we are doing has real meaning. I need some help and I am feeling a bit uneasy that I am leading this thing without Margie [the Head of Māori]. Margie is so busy, wearing so many 'things Māori' hats, but I feel that I am treading on her mana* (status and wairua) *if she is not in some way involved.*

Together with Margie the Head of Māori at GBHS, (Margie is also a local Manawhenua Ki Mohua Iwi leader), we decided to expand the participation of the Whare Iti project into the junior school. We chose Ako (to learn, instruct, teach, advise) as a dynamic method of learning and teaching. This works well as our junior / senior classes' line up on the Timetable. The reciprocity of Ako and our intention to learn from each other helps to strengthen our working relationship and also develops a further opportunity to engage with our whānau community-both here at GBHS and at GKELC.

> *There are more kapu or cuts to indicate new Knowledge, appearing in the Rauru. From within the Rauru I am feeling really excited as the project is really starting to gather its own momentum. You can tell by the buzz and the lively chatter and laughter that lifts above their groups, there is a sense of confidence in their combined productive prototyping work.*

As indicated in Chapter 2, the second discourse position, as defined by Bishop and Berryman as 'School Structures', relates I believe to my initiative to introduce this curriculum initiative to Golden Bay High School. This initiative, Te Whare Iti o Te Ako, integrates multiple learning areas and is undertaken together with Manawhenua Ki Mohua (Golden Bay Iwi). It involves most of the school, its wider whānau community that is the Kāhui Ako (Communities of Learning), the GKELC and a wide range of local community businesses. I am the 'Within School

Leader' for the Golden Bay Kāhui Ako and the Te Whare Iti o Te Ako Project is seen as a model project of our Kāhui Ako action. This action suggests that it is possible, within the control of the school leadership and from within the learning institution, to counter the 'Structuralist' restraints and validate mātauranga Māori and indigenous knowledge that includes tikanga. The opportunity for change now exists due to the recently retired long serving Transactional Leader / Principal, who relied mainly on external policy directives. GBHS requires Transformative Leadership, making way for a moral imperative with a focus on "the positive use of individual and collective power and influence to achieve collaborative and participatory school-wide reform that leads to social justice and equity. The public good" (Poutama Pounamu, n.d., para.19).

Boundaries need to be redefined or removed. The inclusion of Mana Whenua Ki Mohua (the Iwi of Golden Bay) is essential. I go and visit our kaumatua (representative of Mana Whenua Ki Mohua) and have a conversation with Hōne (John) and explain how I think things are going.

> *Tuakana teina and teina tuakana is respectfully our method of inquiry and of knowledge sharing. They have permission to make a 'withdrawal' from their cultural capital, 'my boys' do not expect me to know much about whakairo which is a bit of a relief to be honest. They are competitively but supportively finding and feeling it out for themselves and each other. It is such a cool atmosphere, I am so relieved and appreciative of their respect for my lack of knowledge while they seriously go about finding the knowledge they need and already have from many different places, including themselves, their whānau and within each other.*

The six boys are ready to start on their whakairo pieces for the back wall. These pieces will make up the centre pou (main central carved piece). They will be in pride of place. We all get started- a blank board. I am guiding the boys but not much, I do not really know what I am doing, I am drawing from the knowledge that I gained a long time ago- from the Gisborne Boys High School Hall project, and the time I spent at Toihoukura. Margie has given us some figure ideas to get started. We have the prized hook of Manuruhi (son of Ruatepupuke), Tangaroa, and four sea creatures. While we sketch we discuss the story of Tangaroa. They seem to enjoy

that it is not a real sense making story, and we discuss the difference between fiction and nonfiction and where this gets blurred by belief systems and our sense of reality. We all enthusiastically agree and with lots of whakatoi (cheeky, mischievous, humour) decide that the story would make a great computer game. I tell the boys to just begin and to see where it leads, "just go with your feelings". I give them a few pointers on how to use the chisels safely, how to cut round our freshly drawn outlines using the band saw and jig saw. They are keen and naturally exercising their rangatiratanga (determination, problem-solving skills and persistence) get right into the Rauru.

Test- The testing in a design process involves engaging in evaluative thinking and experiencing the form and functionality of the project. This informs both the designer and the key stakeholder (client, customer). The reflective nature of the thinking, that reviews the accuracy of the process, and the accuracy of the outcome, is not unlike the Rauru, where one can trace a finger along the spiral of the iho (section of umbilical cord connected to the mother) eventually one finds themselves arriving at the pito (the end of the umbilical cord connected to the baby) only to start the journey once again. Design Technology Education provides opportunities for constant reflection and technological innovation. The process of testing reveals insights that redefine/define the problem. Testing creates new ideas for the project (Ideate) and testing allows you to learn more about the users (Empathy) and so the cycle continues.

What is it? They asked out loud.

It was an afternoon early in December. People in town were already talking about Christmas, when 56 kids from GKELC sat excitedly a safe distance from the descending wrapped boxlike thing that was being lowered by crane from a great height over the back fence of their kura (school). What is it? They all called out. Who's in there? They asked.

> *It was me. I had found my way in the Rauru - I felt like Father Christmas.*
> *Not just the culmination of a year's hard work by the students, Margie*
> *and me, but as an exhibition of an action that had been looking for a*
> *tikanga.*

Completing the testing requires the whānau of GKELC to have the opportunity to put Whare Iti Te Ako to use. Tullia Wilson (2017) reports "My hope is that is in some small way this helps to normalise the fact that tikanga and Te Reo is here, and here to stay and grow. It's about building on all that's already there." That very same day, GKELC became known as, He Waka Huia Tamarikitanga (The Treasure Box of Knowledge for Children). The kura was gifted the new name by kaumatua Hōne Ward-Holmes, and together with our koha (gift) Te Whare Iti o Te Ako, the congregation followed Hōne and joined together in accordance with tikanga, lifted the tapu as we walked in procession through He Waka Huia Tamarikitanga while reciting karakia (prayer) to the Atua (ancestor with continuing influence). We then engaged in whaikōrero (formal speeches), a number of kōrero tene (spontaneous speeches) and mihi whakatau (speech of welcome) from the whānau of He Waka Huia Tamarikitanga. We then together sang waiata (songs). Hākari (feast of food) completed the ceremony but not before two GBHS students joined with a small but very enthusiastic group of tamariki from He Waka Huia Tamarikitanga, and proceeded to complete the 'Big Reveal'. Te Whare Iti o Te Ako was unwrapped and brought into the light of day and with a chorus of oohhs and aaahhs of excitement, surprise and admiration, the tamariki took their shoes off and put Te Whare Iti o Te Ako to the test.

Chapter 5

Discussion and Conclusion

Introduction

This chapter discusses the findings of the study based on the research questions. The discussion considers the research questions and shares my motivation and reasoning for completing this study. This is then followed by conclusions made from the study, where a number of deductions and suggestions for change in Technology Education are made. The chapter concludes with suggestions for further research.

Discussion

I wanted to make a difference by telling my story. Writing my story has been the most challenging, yet rewarding endeavour I have encountered as a teacher. I wanted to give voice to the Pākehā technology teacher. I wanted to tell my story of change and empowerment that the research method has enabled. Not just my new found empowerment and confidence, but the return of, and handing back of, empowerment to my Māori students that enables them in turn, to tuakana teina along-side of the learning of their Pākehā peers and their Pākehā teacher. A praxis that is in a space that is without deficit theorising or cultural bias, and in a space that gets beneth the misguided rhetoric and demand for 'tick box' expediency that comes from the Transactional structualists.

I wanted to tell how it looks and feels to share power and success. How together with my Pākehā students I came to acknowledge who my Māori students are, where they come from and who they aspire to be. As depicted in the painting by Robyn Kahukiwa *The Choice* (2004) I wanted to allow them to leave their Pākehā masks at the workshop door.

This dissertation established that inclusive pedagogies for bicultural technology education are possible. If the people involved, who hold the power, believe and want inclusive pedagogies for bicultural technology education, then to make this happen the development of critical consciousness is needed. Recognising one's culture in positive terms, is likely not to happen without this. Instead we continue to measure others such as our students, against who we are.

There is a need to recognise and respect the cultural location and identity of all students, teachers and whanau members. This requires getting to know them through respectful relational pedagogies. Decolonisation requires the imaginative creation of a new form of consciousness that is inclusive of pedagogies which respect and celebrate other cultures and cultural diversity, enabling possibly unforeseen technological innovations and new knowledge. The actions involved in this research not only shows this, but they have also taught me that by moving designs, developments and discourses beyond eurocentric / colonial thinking, and towards Te Ao Māori thinking, resulted in school and community wide projects that include tikanga Māori.

This I believe is where the finger that traces the curve of the Rauru and meets the kapu that is the new knowledge, that will enable a pedagogical praxis that provides agency for Māori students, their whānau and iwi to contribute from the depth of their cultural capital. This required and enabled me to learn more deeply from Māori, including my Māori students and whānau, about who they are and the role I could play in these spaces.

Telling my story is for the benefit of readers who would take an active role in aiming to improve the educational outcomes for their Māori students. Should other teachers understand and feel my experiences and then reflect upon these and their own story, they too may come to understand, and be provoked, to make changes in their own practice through critical consciousness. (Ellis 2004). Be warned, the journey through the curves of the Rauru is not a straight forward easy one. The road map is unique to you, you are both the designer and the stakeholder. Without your own cultural consciousness, nothing will happen and without the structural shift in your praxis, nothing will happen. The belief that you can include tikanga into your classrooms, must begin with humility and respect.

Despite the predetermined size constraints of this research document, I would never have thought that through this vignette that I would discover so much about myself and benefit from the discoveries when I began. I now understand why I do what I do as a teacher. Having taken this introspective autoethnographic journey, I realise that my identity truly shapes my being a technology teacher and drives all that I do from day to day as I teach my students and

learn from them; my Māori students, their whānau and mana whenua ki Mohua. The interconnectedness of the here and now, and what has come before and their ancestors.

I have sat and listened to tohunga (expert) and I have sat and listened to ākonga (student). I have with the greatest respect come to understand that Māori tikanga is more than the protocols of Māori culture and that tikanga is and should be, pervasive in all that I do as a teacher and as a Pākehā in Aotearoa New Zealand. For it is the mauri (essence) of Te Ao Māori. It is greater than the sum of its parts.

The use of the rauru whakairo metaphor in my research journey, has allowed me to describe my 'self' discoveries as I travelled with these 'selves', and as I negotiated my way through the many learning curves into the light of day.

During my reflexive cultural reform as I discovered and learned to understand my findings, I joined Toihoukura for the year. I immersed myself into a world that is not my own, but a world that is willing to manaaki my determination to understand, and own the responsibility of being both a kaiako and a ākonga of Māori in Aotearoa New Zealand. The privilege of being welcome to learn by just being in the moment, alongside amazingly beautiful fellow humans, artists, carriers of the tikanga, and constructors of the new knowledge. To be allowed to penetrate their mauri and ask the outsider questions only to feel their patience as they answered my perplexing inquiries. To them, understanding Te Ao Māori is inherent in who they are, but that didn't stop them from trying to help me to understand.

This research has by way of my story telling, exposed my human vulnerability. It is hoped that these experiences will support other teachers of Technology to see by way of my discourse, examples of experimental and uncertain technological practice. To understand that it is ok to be unsure and uncomfortable, but by being receptive of what you do not understand, and what you do not know, is an ok place to be, even if you are the teacher.

Conclusion

My research conclusion is that Design and Technology Education is capable of working towards reconciling the social inequalities in Aotearoa New Zealand today. While fostering diverse cultural expression in problem-solving and solution creating, design and technological activity have the potential to support, rather than compromise learners' identities. Thus encouraging

Māori students to engage in technological pursuits that they can do with cultural confidence. The research concludes, that to invite and be invited by Kaumātua and iwi, will ensure that due respect is shown to the kaupapa (theme), and Te Ao Māori. With this in place, the socially embedded activity that is Technology Education, is a suitable home for the inclusion of tikanga Māori into a teacher's Technological practice and that Technology education is a rightful place for it to stand.

This story has relevance because the culturally responsive methodology utilised, along with the autoethnographic method, provides a system of self-examination and identity construction that may be useful for other technology classroom teachers. Especially if they want to take ownership for self-improvement and want to improve their culturally responsive relational pedagogy, and in doing so, the learning outcomes for their Māori students.

The findings in this research point to a need for a reform of both Structuralist and Culturalist positions. The reformation of the technology curriculum that allows and supports teachers to take what will be the new norm to depth. This normative curriculum is to be a bicultural curriculum. As Burr (1995) suggests, "We have agency that allows us to change the way we see and make sense of the world by drawing from other discourses" as cited in Bishop, 2011, p. 48). The repositioning of control in power relations that teachers hold will be shared with students and their whānau. Knowledge base and assets are equally valued through establishing relationships with students and their homes. In practice, this means that as part of a commitment to Te Tiriti o Waitangi, all ākonga experience, learn about, and connect with Te Ao Māori. Ākonga, both Māori and Pākehā, kaiako and kaumātua, whānau from both kura and the kāhui ako all benefited from tuakana teina learning.

This dissertation is but one small contribution. The research finds that there is a dearth of literature that informs us of the concept of a technology curriculum that is a product of bi-cultural indigenous partnership. It is my conclusion that this review of the literature shows that the New Zealand Technology Curriculum is not bi-cultural. The findings of this research point clearly for the need for inclusion of tikanga Māori. Exploration, adaptation, creativity and innovation have always been attributes of Māori. In partnership with, and to tautoko (to support) what has been shared earlier from Derek Lardelli, like the cloak worn by Te Maro, the New Zealand Technology Curriculum needs to be cloaked in mātauranga Māori. Or to put it

another way, two hundred and fifty years ago Te Maro was willing to put on the colonial cloak. Is it not time for the cloak of Te Maro to be worn?

Further research opportunities

Does a humanistic pedagogical approach to teaching and learning in Technology Education exist in Aotearoa New Zealand? I believe there is an opportunity for a particular research focus in an attempt to gain a better understanding of tuakana teina relationships within student groups whilst learning in Technology Education. A possible additional scope of this research could be to include a study of the accessibility of formal assessments for senior secondary school technology students. In particular, Māori students, who present collective and collaborated evidence of learning and achievement by way of a tuakana teina approach.

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