Research article

Culturally responsive teaching through primary science in Aotearoa New Zealand

Steven S. Sexton[1,*] (ID)

[1] University of Otago/Te Whare Wānanga o Otāgo, Dunedin, New Zealand
* Correspondence: steven.sexton@otago.ac.nz

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Abstract

The need for better education through science is not a new idea in Aotearoa New Zealand. Through several curriculum changes, teachers have not been well supported by the Ministry of Education in how to implement these changes. In addition, since 2020, all classroom teachers are required to demonstrate how they are culturally responsive in their teaching practice, and what they are doing to be more culturally responsive year-on-year. Fortunately, a resource written by Māori teachers for teachers was launched in 2020 to help support teachers in being more culturally responsive. This article reports on how teachers are being supported to be more culturally responsive teachers by weaving together mainstream curriculum science and *Mātauranga Māori* (Indigenous traditional knowledge). It argues how mainstream curriculum and Mātauranga Māori can be partnered using a *pūrākau* (cultural narrative) in meaningful classroom practice. It concludes by showing how both mainstream and Māori pedagogies can work together to support all students' learning and cultural competence.

Introduction

The need for better education through science is not a new idea in Aotearoa New Zealand. Aotearoa is New Zealand's Indigenous name and means 'the land of the long white cloud'. It should be noted that many *te reo Māori* (the Māori language) words have become commonly used in mainstream communication; however, for this article translations will be provided following any usage of te reo Māori. Scott (1997: 49–50) notes, 'If the science achievement of primary students is to be improved, teachers will need strategies to analyse the opportunities to learn science which their classrooms currently provide, and to analyse the variations in opportunities which their students experience.' Scott wrote this over 26 years ago, and 4 years after the introduction of the 1993 New Zealand curriculum documents. The 1993 documents list 'Possible Learning Experiences' that students could be learning (see, for example, Ministry of Education [1993] for the science curriculum document). In 2007, a new curriculum was implemented (Ministry of Education, 2007). While this new curriculum made significant advances in how science and education through science should be approached (Sexton, 2011), those of us in the classroom at this time were not supported in achieving this understanding (Kennedy et al., 2015).

The Teaching Council of Aotearoa New Zealand is the licensing body for all classroom practitioners. Since 2020, *kaiako* (teachers) are no longer to be performance-appraised every three years by their school's senior management; they are now to engage in yearly professional growth-cycle conversations about how they are meeting the requirements of *Our Code Our Standards: Code of professional responsibility and standards for the teaching profession* (*OCOS*) (Education Council, 2017). *OCOS* includes an explicit requirement that all kaiako, 'Demonstrate commitment to tangata whenuatanga and Te Tiriti o Waitangi partnership in Aotearoa New Zealand' (Education Council, 2017: 18). *Tangata whenuatanga* means to support or enhance the Indigenous people of Aotearoa New Zealand and *Te Tiriti o Waitangi* is the treaty signed between the British Crown and local Indigenous leaders in 1840 (it is no longer referred to by its English translation). As such, all classroom kaiako are required to demonstrate how they are culturally responsive in their teaching practice, and what they are doing to be more culturally responsive year-on-year. In Aotearoa New Zealand, culturally responsive teaching is defined as 'making school learning relevant and effective for learners by drawing on students' cultural knowledge, life experiences, frames of reference, languages, and performance and communication styles. This means making what students know, and how they know it, the foundation of learning and teaching interactions and curriculum' (The Education Hub, 2022: 2).

I argue that Aotearoa New Zealand has not supported its kaiako well in being able to implement curriculum changes or new policy initiatives. For example, when the 1993 curriculum documents were being replaced with the 2007 document, the only professional learning and development (PLD) we received was the opening of the box and having this new curriculum document handed out in our staffroom meetings. Furthermore, our Ministry of Education is now halfway through a five-year curriculum 'refresh' that is dramatically repositioning what and how teaching will occur. This refreshed curriculum is taking significant steps towards greater Te Tiriti o Waitangi partnership to include stronger links and usage of *te reo me ngā tikanga Māori* (the language and ways of being Māori), as required by the Education and Training Act 2020 (Parliamentary Counsel Office, 2023). Unfortunately, in a nationwide *hui* (meeting) about this refresh, when asked how the country's 72,000 kaiako were going to be supported in implementing this new refreshed curriculum, the Ministry of Education indicated that this was something they were still thinking about (M. Adler, Ministry of Education – personal communication, 21 July 2022). This does not bode well for kaiako getting the support they need to be the culturally responsive kaiako that both *OCOS* and this new refreshed curriculum require.

Culturally relevant pedagogy

In her seminal article, Gloria Ladson-Billings (1995) noted that her work in pedagogical excellence in good teaching was based on three must-have criteria for the students: experiencing academic success;

developing cultural competence; and developing critical consciousness. In the same article, she noted the difficulty in initial teacher education in making a difference, but that we 'are obliged to re-educate the candidates we currently attract towards a more expansive view of pedagogy' (Ladson-Billings, 1995: 483). To her dismay, 20 years later she noted that much of what is being called culturally relevant pedagogy (CRP) is not what she intended (Ladson-Billings, 2014). CRP is not about including a few books on diversity or images on the walls. She concluded that, 'if we are to help novice teachers become good and experienced teachers to become better, we need theoretical propositions about pedagogy that help them understand, reflect on, and improve their philosophy and teaching practice' (Ladson-Billings, 2014: 83).

Fortunately, in 2020, a resource was written to support kaiako in how to be more culturally responsive in teaching and learning in Aotearoa New Zealand. This resource is *The Hikairo Schema for Primary: Culturally responsive teaching and learning* (*The Hikairo Schema*) (Rātima et al., 2020). *The Hikairo Schema* is a scaffolding tool designed for primary kaiako in English-medium classrooms. It positions outcomes and experiences from a te ao Māori (Māori world view). Rātima et al. (2020: 11) argue that *The Hikairo Schema*'s six Māori concepts can benefit both Māori and *tauiwi* (non-Māori) *ākonga* (students): 'It will help kaiako create culturally inclusive environments that support achievement by identifying, nurturing, and utilising the strengths of ākonga'.

The Hikairo Schema

The Hikairo Schema acknowledges that learning is a lifelong journey. As a resource for kaiako, *The Hikairo Schema*'s six Māori concepts are linked explicitly to both *OCOS* and another established New Zealand resource, *Tātaiako: Cultural competencies for teachers of Māori learners* (*Tātaiako*) (Ministry of Education and New Zealand Teachers Council, 2011). It should be noted that in New Zealand, 95 per cent of all ākonga attend English-medium schools (Education Counts, 2023). Therefore, while approximately 17 per cent of the country self-identifies as Māori (StatsNZ, 2023), most Māori ākonga experience an English-medium education. The difference between *Tātaiako* and *The Hikairo Schema* is that the latter is for all primary kaiako, regardless of who their ākonga are.

The six Māori concepts are not ranked in order of precedent or application. They are all pieces of the puzzle, and all work together to complete the picture. If any one of them is missing, the picture is incomplete. Huataki Begin Affirmatively refers to the beginning practices a kaiako uses to start not only each day, but also each lesson. This includes the planning, preparation and presentation of each learning opportunity. Ihi Demonstrate Assertiveness is the kaiako being firm but fair in all their interactions with ākonga as they build and support ākonga's *mana* (prestige, power, status). Kotahitanga Establish Inclusion is how kaiako work respectfully with others as they lay the foundation that education is built on these relationships. Āwhinatia Build Connections acknowledges that the ākonga and their family are all part of the learning environment. It focuses on how the kaiako is able to create safe spaces for ākonga, as well as targeting each ākonga's learning needs. Ira Manaaki Engender Care positions the class as a group of individuals who all matter as they work together to facilitate shared learning. Rangatiratanga Enhance Meaning is the kaiako establishing learning that is relevant, useful and meaningful to their ākonga, based on what they need to learn.

The Hikairo Schema, while written for Aotearoa New Zealand, and drawing primarily from te ao Māori sources, promotes many ideas from the wider CRP literature. For example, Villegas and Lucas (2002: 92) argue that CRP is not an 'add-on' for students from non-mainstream backgrounds only, as 'schooling should be responsive for all children'. Gay (2018) highlights how CRP makes meaningful connections between students' homes and school, as it fosters pride in one's identity. As such, *The Hikairo Schema* supports kaiako in being culturally responsive, as the entire resource is grounded in the partnership with ākonga and their *whānau* (family) in the learning environment. It necessitates the weaving of people, histories, identities and culture in the classroom. One of its greatest supporting components is that it provides several learning outcomes for each of these six concepts, with a range of strategies that a kaiako could implement in their practice to demonstrate how they are working on being more culturally responsive in their teaching practice.

Kaupapa Māori as theoretical framework

Aotearoa New Zealand grew out of colonisation (Sutherland et al., 2001). A treaty was signed between representatives of the British Crown and local Indigenous chiefs in 1840. G.H. Smith (2000) highlights how in the te reo Māori version, this treaty promised the Indigenous population partnership, protection and participation. Unfortunately, the English version did not match the te reo Māori version. In the English version, Māori leaders gave Queen Victoria '*sovereignty*' over their land. In the Māori version, Māori leaders gave her 'te kawanatanga katoa' or 'the complete *government*' over their land. Māori believed that they were going to keep their authority and manage their own affairs. They thought that they had only ceded a right of governance to the Queen in return for the promise of protection. This protection was primarily from unruly English sailors, whalers and sealers. There would be only a few here who would argue against the idea that the chiefs who signed Te Tiriti o Waitangi expected to enter into some kind of partnership and power sharing in the new system. This partnership did not happen.

Sutherland et al. (2001) provide a summary of how education in Aotearoa New Zealand changed and developed as more tauiwi arrived. As the population increased between 1840 and 1870, calls for a national approach to education grew. The educational policies in the various provinces were unified and centralised by the now numerically dominant *Pākehā* (White Europeans). The 1877 Education Act identified assimilation as New Zealand's official educational policy (Sutherland et al., 2001). As a result, primary schooling became a right of every citizen funded by the state; however, primary schooling was to be taught in English, and focused on reading, writing and arithmetic, and English grammar and composition. This policy remained in effect until the 1989 Education Act revised it under neoliberalism (Jesson, 2001). Education went from being a free right of every citizen to a commodity that can be 'bought or sold' (Jesson, 2001: 95). Schools were now in competition with each other for student numbers. Parents were able to move their children to whichever school they deemed better suited to their child.

It was also at this time that *Kaupapa Māori* (Māori philosophy and principles) emerged. Kaupapa Māori was an active revitalisation of Māori aspirations, preferences and practices against the hegemony of the dominate Pākehā discourse (Bishop and Glynn, 1999). Kaupapa Māori not only seeks to sustain Māori cultural and language aspirations, but also seeks autonomy as *tino rangatiratanga* (which literally means chiefly control, but which is often used to refer to self-government and self-determination). This was not, nor is it, a call for separation or for tauiwi to stand aside. Kaupapa Māori seeks to restructure the power relationships so that partners can interact together without one being dominant or subordinate (L.T. Smith, 1999).

This revitalisation of Indigenous language, cultural practices, beliefs and ways of thinking was not only happening in New Zealand. Paris (2012), in arguing for culturally sustaining pedagogy, notes similar actions taking place with the growing variety of Indigenous American students. Paris (2012: 95) states that 'culturally sustaining pedagogy seeks to perpetuate and foster – to sustain – linguistic, literate, and cultural pluralism as part of the democratic project of schooling'. He goes on to note that a pluralistic society needs both within-group and across-group cultural practices. As noted, New Zealand has a signed document between the two treaty partners, which account for 87 per cent of the population: Pākehā approximately 70 per cent and Māori approximately 17 per cent (StatsNZ, 2023). As also noted, this partnership has not been advantageous to Māori. As a result, Māori researchers have been working to promote more across-group cultural practices between Pākehā and Māori through Kaupapa Māori.

G.H. Smith (1997) identifies the six core principles of Kaupapa Māori. His thesis was written in English for a mainstream audience; however, other Māori academics and authors have stated these principles in te reo Māori (see, for example, Bishop and Glynn, 1999). These core principles are: self-determination or relative autonomy; validating and legitimising cultural aspirations and identity; incorporating culturally preferred pedagogy; mediating socio-economic and home difficulties; incorporating cultural structures which emphasise the 'collective' rather than the 'individual' (with single inverted commas in the original for emphasis), such as the notion of the extended family; and shared and collective vision/philosophy. G.H. Smith (1997) goes on to note that Kaupapa Māori promotes the validity and legitimacy of Māori language, knowledge and culture. He highlights that Kaupapa Māori is not a synonym for Mātauranga Māori (Indigenous traditional knowledge). It does, however, acknowledge the need to make space for Māori language, knowledge and culture. As such, this article uses Kaupapa Māori as its theoretical framework as it seeks to demonstrate how science and Mātuaranga Māori can be woven together in mainstream education.

Mātauranga Māori

The Poutama Pounamu Education and Research Centre at the University of Waikato (2023) explains how Mātauranga Māori draws from precolonial Māori knowledge. This includes Māori traditional ways of being and engaging in the world. As such, it uses both *kawa* (how to behave as Māori) and *tikanga* (the ways of being Māori) to critique, analyse and understand our engagement in the world. Mead (2012) argues how Mātauranga Māori is a *taonga* (treasure) for both Māori and all of Aotearoa New Zealand. Significantly for this article, New Zealand's Education and Training Act 2020 (Parliamentary Counsel Office, 2023) requires schools to incorporate Mātauranga Māori authentically and appropriately into its plans, policies and curriculum.

Pūrākau (cultural narratives) make up significant portions of Mātauranga Māori, alongside other cultural arts and expressions. As such, pūrākau form a way of presenting and understanding the world from te ao Māori. Importantly, pūrākau often serve the purpose of upholding tikanga (Clarke et al., 2018). Unfortunately, Mead (2020) highlights that much of the Mātauranga Māori in the form of pūrākau has been lost, colonised and replaced.

Mātauranga Māori and culturally responsive pedagogy

Mātauranga Māori starts with *Mana whenua* (the local people) and their stories. In te ao Māori, the *whenua* (the land) and its people are connected, so much so that formal introductions begin with a person's mountain, their river or a significant body of water, and the geographical area they are from. As a result, many *whakataukī* (proverbs representing the wisdom guiding Māori culture) concern the relationship between the land and its people; for example, 'Ko au te whenua, ko te whenua ko au' (translated as 'I am the land, and the land is me'). This is why in Mātauranga Māori, CRP starts with Mana whenua. What are their pūrākau about their land and their sites of significance? Much of Mana whenua's pūrākau have been affected by Aotearoa New Zealand's educational policy of assimilation, which was in effect from 1877 to 1987. It took an educational, political and cultural revolution in the 1980s, led by Māori, to start to address the previous hundred years of Māori suppression (Bishop and Glynn, 1999; G.H. Smith, 2000). Now, 40 years after this revolution started, *OCOS* requires all kaiako to be more culturally responsive.

This article highlights why and how pūrākau can be an effective tool to support kaiako in being more culturally responsive. *The Hikairo Schema* explicitly notes this as a strategy to support Kotahitanga Establish Inclusion – 'Draw on Māori waiata, whakataukī, and pūrākau to transition between learning activities or experiences' – as one simple way (Rātima et al., 2020: 30). It goes deeper, with much stronger links, with a strategy for Āwhinatia Build Connections, 'Draw on the environment/nature as a source of knowledge' – 'For example, take students outdoors to study nature and attempt to make links with familiar whakataukī or pūrākau that draw on nature to convey wisdom' (Rātima et al., 2020: 33). Specifically for this article, science is just one of the curriculum areas that supports the relevant, useful and meaningful inclusion of Mātauranga Māori as CRP.

Science and Mātauranga Māori

I am a primary school kaiako who now works in initial teacher education (ITE). As part of my job in ITE, I am required to maintain my status as a fully registered kaiako. Therefore, I am subject to meeting *OCOS's* requirements. Like most kaiako in Aotearoa New Zealand, I am tauiwi. Unlike most, I have led PLD for both preservice and in-service kaiako. Over the past several years, this has been in how to bring culturally responsive teaching into the classroom (Orelus et al., 2014; Souto-Manning et al., 2018). As I deliver the science education component of an ITE provider, I have been working with student kaiako (Sexton, 2022) and in-service kaiako (Sexton, in press) on authentic inclusion of Mātuaranga Māori in practice (Gay, 2018).

In *The New Zealand Curriculum* (Ministry of Education, 2007: 28), science is defined as 'a way of investigating, understanding, and explaining our natural, physical world and the wider universe'. Science seeks to develop knowledge. This curriculum was written from a tauiwi perspective; however, this definition begins with 'a' way, as the curriculum acknowledges that there is more than one way. Much has been written about the effects and impact of colonisation on Indigenous knowledge systems (Akena, 2012; Khupe, 2020; Kidman et al., 2013; Mazzocchi, 2018; Perry and Holt, 2018). Mātuaranga

Māori as Aotearoa New Zealand's Indigenous knowledge system has, unfortunately, not been spared colonisation. Fortunately for today's Māori, it is still not the same as Western science. Mazzocchi (2018) highlights how Western science tends to seek knowledge and understanding through the separation of the object being studied from its context using controllable experimental environments. As a result, in Western science, the scientist is positioned as separate from nature; Khupe (2020), however, highlights how Indigenous knowledge seeks to understand the connections and relationships between all things human and non-human, and, as such, knowledge cannot be understood apart from the knower. Khupe (2020) goes on to highlight the significance of mountains and rivers in some cultures (as in the case of Māori culture). So, while Western science and Mātauranga Māori are not the same, they can be woven together through Kaupapa Māori.

If science is seen within a Kaupapa Māori framework, then from the perspectives of both the mainstream curriculum and Mātuaranga Māori, geographic concepts allow for the exploration of relationships and connections between people and both the natural and cultural environments. In both paradigms, geographic concepts have a spatial component, meaning that there is a relationship in terms of position, area and size (Mutch et al., 2009). Kaiako may also choose additional key concepts that connect with the local environment or the circumstances of their ākonga, such as: Environments, Perspectives, Processes, Patterns, Interaction, Change and Sustainability (Mutch et al., 2009). Mutch et al.'s (2009) content was written prior to the expectations of *OCOS*. A weaving of this content and Mātauranga Māori through Kaupapa Māori highlights how these can work together as culturally responsive teaching.

A person's *environment* is comprised of both their physical and cultural environment. Both environments have characteristics and features as a result of what happens in that environment. These characteristics may be similar to and/or different from one another. The cultural environment includes both the people in it and what has been built by them.

Perspectives are ways of seeing the world that help explain differences in decisions about, responses to, and interactions with environments. This does not position one perspective as dominant in relation to another. It does acknowledge that perspectives are bodies of thought, theories or world views that shape values and have developed over time. Perspectives are comprised of both perceptions and viewpoints. Perceptions are how people view and interpret their environments, while viewpoints are what they think. Importantly, both perceptions and viewpoints are influenced by those deeply held beliefs about what is important or desirable.

Processes are sequences of both those natural and cultural actions that shape and change the environment and society. These processes could include natural actions such as erosion and desertification, and cultural actions such as migration and globalisation.

Patterns refer to features of the Earth's surface such as hills, valleys and rivers. Patterns also account for how these features change over time.

In terms of geography and weaving together a Western and Indigenous paradigm, *interaction* needs little amending. Interaction is concerned with how components of the environment affect each other and are linked together. In terms of geography, the landscape is the visible representation of these interrelated interactions.

Similarly, *change* as a geographical concept also needs only minor adjustments, as it involves any alteration to the natural or cultural environment. It is important to note that change can be spatial and/or temporal. Furthermore, change in either the natural or cultural environment is part of the environment. This change can be slow or rapid, may happen at any time, and may happen in any place. Some changes are predictable, and some are not.

Sustainability, I argue, is probably the one Western paradigm concept that has been the most positively influenced by Mātauranga Māori. Sustainability from a Western paradigm involves adopting ways of thinking and behaving that allow individuals, groups and societies to meet their needs and aspirations without preventing future generations from meeting theirs. This concept is a parallel concept to *kaitiakitanga* (stewardship of the land) in te ao Māori. In both paradigms, sustainable interaction with the environment may be achieved by preventing, limiting, minimising or correcting environmental pollution to *wai* (water), *hau* (air) and *whenua* (land).

These key concepts are not only significant in their own right; they may also be interrelated. As such, pūrākau allow any of these, or potentially all of these, key concepts to be woven together for relevant, useful and meaningful learning in merging science and Mātauranga Māori to support culturally responsive teaching.

Pūrākau and science

As stated, Mātauranga Māori starts with Mana whenua and their pūrākau. Classroom practice with Mātauranga Māori then seeks the science that is linked to the pūrākau to allow ākonga to investigate their world. I live in the lower part of the Te Wai Pounamu South Island of Aotearoa New Zealand. Like most areas, it is rich with history and its own pūrākau. One is *Under the Eye of the Saddle Hill Taniwha* (Bray et al., 1998). Every *iwi* (Indigenous tribal groupings of several hapū or extended families) is associated with at least one taniwha.

Taniwha are large supernatural beings. They tend to be located in areas that require a guardian, or they explain why an area is dangerous and needs to be avoided. This leads many to incorrectly and inappropriately consider taniwha as evil beings. This published text, under the guidance of Mana whenua, records how local geographical features were named from a te ao Māori perspective. This taniwha's name is Matamata, which can mean top, summit, point or headland, depending on the context. This text was written to record historical information about the local geographical area, and not as a picture book for kaiako to use in classroom teaching. It has been adapted for primary school (ākonga aged 5 to 13 years) by taking the provided information and rephrasing it to have relevant, useful and meaningful connections to ākonga learning. In this pūrākau, Matamata is responsible for carving out the Otago Harbour, and the twists and turns of the Taieri River, before eventually settling on top of Saddle Hill, where he waited so long that he became solidified as part of Saddle Hill (see Figure 1). As indicated in Figure 1, Saddle Hill is comprised of two hills, and it looks like a horse's saddle when viewed side on.

Figure 1. Topographical Map of Saddle Hill area (Source: https://www.topomap.co.nz)

Under the Eye of the Saddle Hill Taniwha (Bray et al., 1998) tells us how Mana whenua understood how the geographic features of this region were formed. It is through this pūrākau that we can see why the Taieri River has all its twists and turns as it makes its way across the region to the ocean. It also explains how Otago Harbour was formed (see Figure 2).

Figure 2. Topographical map of Aotearoa New Zealand – Ōtepoti Dunedin (Source: https://www.topomap.co.nz)
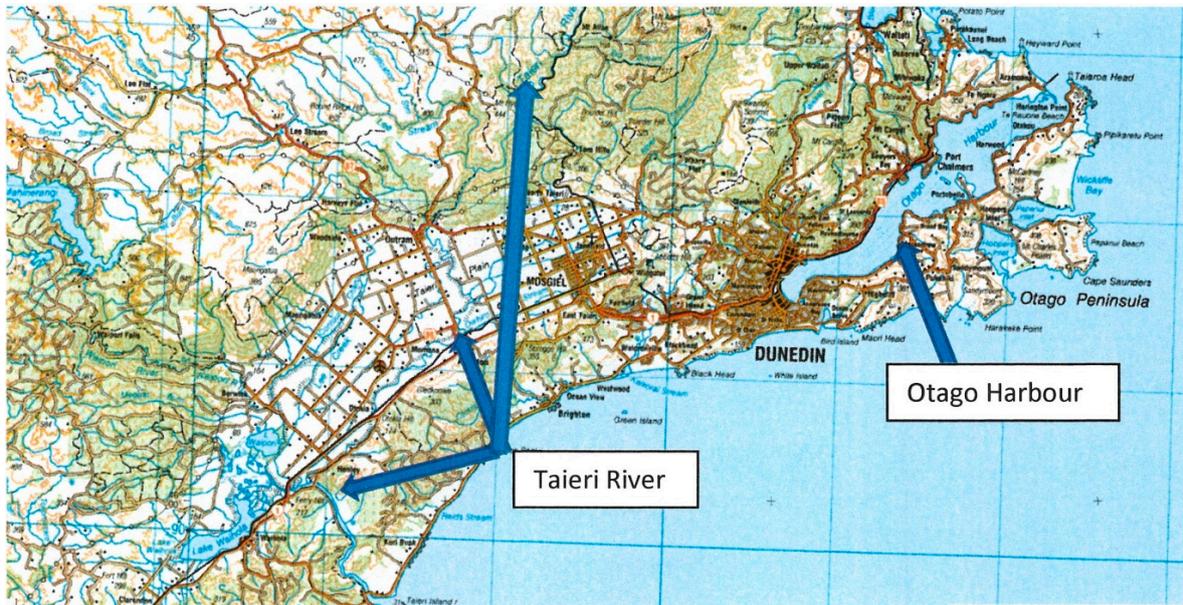
This pūrākau is not only the igniter to learning, but also the core concept for ākonga learning. It brings the ākonga's world of where they live (that is, their local geography) into the classroom, and it allows for the investigation of their world authentically through both science and Mātuaranga Māori.

Relevant, useful and meaningful culturally responsive learning

I have read this pūrākau to young learners (ākonga aged 5 and 6 years), Year 3 and 4 ākonga (aged 8 and 9), and Year 5 and 6 ākonga (aged 11 and 12). As a story, it is about their local area, but if it is used only as a story to be read, the kaiako misses all the potential learning. It is the kaiako's relevant, useful and meaningful weaving of science and Mātauranga Māori through Kaupapa Māori that allows this pūrākau to be culturally responsive teaching.

This weaving begins with environments and perspectives of geography. Most ākonga can see the natural environment around them, which leads to their perspectives of how they view their environment and what they think about it. We can go outside and view the landmarks and describe what we see. While Saddle Hill is a visible landmark, it is rather difficult to bring into the classroom for further investigations. Playdough is a hands-on activity from the curriculum's Material World (Chemistry) that allows ākonga to represent Saddle Hill on a smaller scale. Playdough is a result of a chemical reaction between flour, salt, cream of tartar, oil and boiling hot water, which come together when stirred and then kneaded. Once the playdough has come together, ākonga are asked to show what they think Matamata looked like. The cover of the text gives a common interpretation of a taniwha that is used in Māori art. Ākonga need to feel the playdough and work with it to understand its texture and pliability. Then they use their playdough to represent Saddle Hill (see Figure 3 for ākonga examples).

All three groups were able to demonstrate the patterns and interactions of geography as they recreated the physical appearance of Saddle Hill. All three groups were able to use some degree of topographical mapping in their presentation of the height and elevation of Saddle Hill's two hills. It should be noted that the Year 5 and 6 ākonga were instructed to include the excavation of Jaffray Hill, as it is being quarried out for building materials.

It was the intention of this teaching experience not to force the inclusion of the processes, change or sustainability of geography. This teaching sought to weave this pūrākau naturally and authentically into a science and Mātauranga Māori lesson sequence. It was the explicit intention of this experience

with all three year groups to use the topographical maps of geography in age-appropriate contexts to allow ākonga to produce a model of what they can see.

Figure 3. (Left to right) Representations of Saddle Hill: younger learners, Year 3–4, and Year 5–6

# Pedagogies for ākonga to be academically successful and culturally competent

As noted, Aotearoa New Zealand has defined what culturally responsive teaching is; however, as also noted, kaiako have not been supported in curriculum changes and new policy initiatives to include the 2020 legal requirement for schools to include Mātauranga Māori in their curricula. Fortunately, kaiako support kaiako. As indicated, Rātima et al.'s (2020) *The Hikairo Schema* is a resource for kaiako, by kaiako, to be more effective as the classroom kaiako. The pedagogies of *The Hikairo Schema* are grounded in 'embracing cooperation, understanding, reciprocity, and warmth' (Rātima et al., 2020: 12). This resource includes numerous learning outcomes and strategies that kaiako can use as they work to be more culturally responsive. It supports kaiako's ongoing PLD, as they work to authentically integrate more te reo me ngā tikanga Māori into their teaching environment. Significantly, if both the curriculum document and this resource are woven together, kaiako will have a better understanding of those effective pedagogies for all of their ākonga to be both academically successful and culturally competent.

As noted, Aotearoa New Zealand is undertaking a refresh of the national curriculum for English-medium schools. As also noted, this will change the curriculum significantly, as it better aligns with Te Tiriti o Waitangi partnership (Parliamentary Counsel Office, 2023). What it will not change is the substantive body of evidence about which teaching approaches (that is, effective pedagogies) support ākonga's learning. These effective pedagogies are: Creating a supportive learning environment; Encouraging reflective thought and action; Enhancing the relevance of new learning; Facilitation share learning; Making connections to prior learning and experience; and Providing sufficient opportunities to learn (see Ministry of Education, 2007: 34).

As highlighted, Kaupapa Māori works to allow partners to interact together without one being dominant or subordinate. Through *OCOS*, all kaiako are now required to demonstrate a commitment to Te Tiriti o Waitangi partnership that upholds the values, language and concepts in the curriculum. *The Hikairo Schema* is a resource to support kaiako in how they can use te ao Māori concepts in ongoing PLD, if they understand both the curriculum and this resource. As a PLD and ITE provider, I have been working with both in-service kaiako and student kaiako to see how they weave these two resources to work together (see Figure 4).

I believe that culturally responsive teaching is not facilitated through a transference of tips, tricks or techniques. It should be an authentic component of what we as kaiako do, not something which is an 'add-on', 'nice to have' or 'when you can'. PLD is an ongoing process, but its aims should be to equip kaiako with skills, resources and techniques to gain confidence in being an effective classroom kaiako. PLD should be focused on strengthening teaching practice, and not on addressing gaps from ITE. All student kaiako and in-service kaiako need to be aware of practices, and to teach in ways that develop critical consciousness, and sustain and value cultural identity. Then all our ākonga will have opportunities to flourish and grow, both academically and culturally.

Figure 4. How *The Hikairo Schema* and curriculum can be woven together (Source: author's PLD materials).
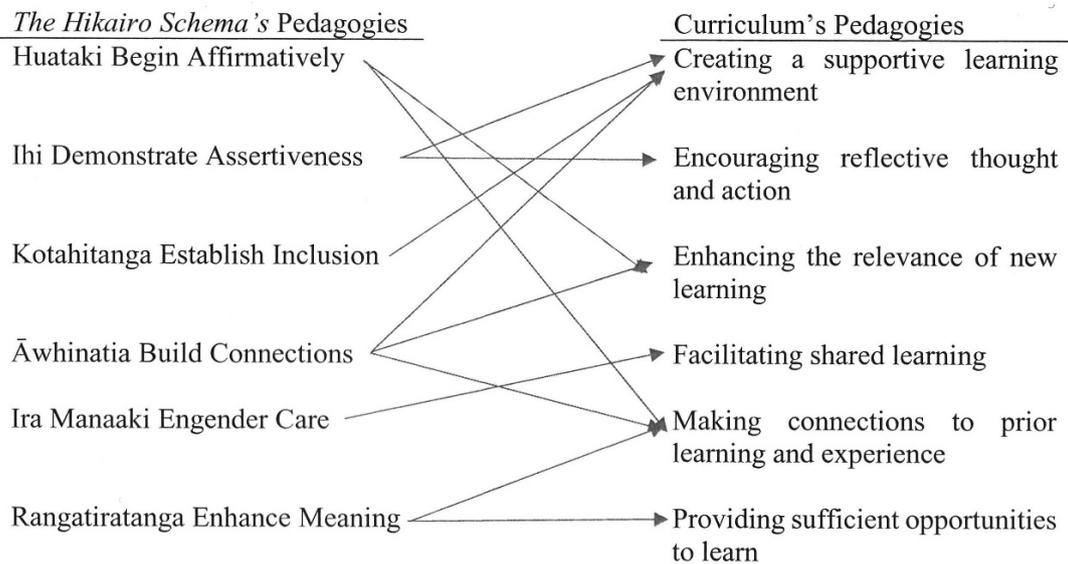
Declarations and conflicts of interest

Research ethics statement

The author declares that research ethics approval for this article was provided by the University of Otago ethics board – Application D21/081.

Consent for publication statement

Not applicable to this article.

Conflicts of interest statement

The author declares no conflicts of interest with this work. All efforts to sufficiently anonymise the author during peer review of this article have been made. The author declares no further conflicts with this article.

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