

Charmaine Russell, Ngāti Ranginui and Ngāi Te Rangi, shares her insights for those trying to honour Te Ao Māori in their teaching. She provides guidance on integrating mātauranga Māori in an authentic way, from her kaiako Māori perspective. Charmaine hopes to "sow the seeds of thought and reflection," for kaiako across New Zealand by sharing her journey with **NZASE Science Communicator Heather Goodey.** 

Charmaine Russell is the Head of Department Science at the Wainuiomata High School and Mana Tangata community study hub coordinator. She leads the department's increased incorporation of mātauranga Māori into their science programmes. The Science Department is trialling a unit for the new L1 assessment standards using the context of preparing harakeke for raranga. Charmaine has a history of effective teaching pedagogy and utilising learning contexts to improve student achievement. Charmaine brings her experience from working in both Whare Kura (Māori unit) and mainstream schools.

# CONNECTING CLASS LEARNING TO LIVED EXPERIENCES

Charmaine teaches through a Māori lens. Part of this is having a class tikanga, she says, starting and ending each lesson with a karakia that connects students to that wānanga space and connecting student as an individual, with experiences and prior knowledge and encourage students to connect the learning in class to their own experiences. "Everyone can learn from each other - teacher to student, student to student, student to teacher - it is about acknowledging where we are from and that we all bring that background with us," says Charmaine.

Māori students have knowledge from their ancestors passed to them and we need to acknowledge that ancestry.



Charmaine Russell

#### INCORPORATING MĀTAURANGA MĀORI

Some examples of mātauranga Māori Charmaine shares in her own teachings are based on her experiences growing up. "Tikanga has been

passed down from my nan, my dad, my aunties, uncles, and cousins." For instance, they taught her techniques for predicting the weather; when to harvest resources; and knowing how to use rongoā including native snail mucus to heal.

Charmaine says, "Many aspects of rongoā are now acknowledged by 'western science'. It is important that our Māori students are represented in research careers because they bring their ancestral knowledge that can lead to new understandings that benefit everyone."

Maramataka alongside environmental indicators dictate when to conduct certain activities and when conditions are best for harvesting and gathering kai and resources. When the pōhutakawa flowers, kina are at their sweetest.

Charmaine believes it is important to realise that not all mātauranga Māori needs to be verified scientifically, but there is a reason behind mātauranga Māori that acknowledges the interconnection of all things and our place in protecting our environment. One way mātauranga can be shared is through pūrākau and pakiwaitara. Charmaine's advice for teachers

To represent the passing of knowledge across generations visually, Charmaine posits imagining a triangle where the student is the apex supported with the knowledge from their parents, then grandparents, and all their ancestors.



Source: Te Rangi Hiroa, The coming of the Māori. Wellington: Māori Purposes Fund Board; Whitcombe and Tombs, 1949

for including pakiwaitara in science - "It is better to understand one pakiwaitara well and connect it to all the relevant subjects, rather than incorporate them for the sake of it.

Remember, these are actual accounts that form an integral part of our history."

Charmaine encourages all teachers to include examples of mātauranga Māori in class and personal experiences (teacher and student) to help ground the lessons in real life. Just make sure you acknowledge where that knowledge has come from and how it has come to you," she says.

#### CHANGES TO COURSES, ASSESSMENTS, AND ENGAGEMENT

Charmaine Russell is an innovator, and when she observes students not attaining at the level that she believes they can, she looks at whether changes to how the Science Department approaches teaching could make a difference.

Some of her examples of redefining approaches included, creating integrated courses between the science and PE departments. By incorporating PE, Physics and Biology standards, Charmaine notes that success rates improved across all three subjects. Developing a pāngarau pūtaiao course to gain numeracy through science standards helped improve the

achievement of the boys in the area. Charmaine notes there was a 100% pass rate in the first

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year. Changing assessment practices in the junior school from written tests to practical assessments improved exceptionally low achievement and engagement to levels that reflected the students' true capability. Inviting feeder schools for High School sessions not only had the added benefit of improving the pathway for future students but also providing professional learning for the feeder school teachers.

In the junior curriculum, they piloted changes in science that were authentically Māori. In the Chemistry unit, students in Whare Kura made Kawakawa tea alongside Charmaine's colleague Whaea Hazel. Students tried a range of additives to the tea from the kitchen (kitchen chemistry) and then provided research on the additives. Senior chemistry students from mainstream sampled the tea and were tasked with verifying the juniors' research and chemistry ideas, later giving feedback to the class. This connected senior students with the juniors in a tuakanateina way and across their different school models. To teach Geology, Charmaine incorporated pūrākau and pakiwaitara. The story of Ngake and Whātaitai, the two taniwha from Wellington Harbor, was related to the fault line and shape of Wellington harbour. "Oh my gosh," Charmaine says, "the excitement from the students on the field trip was unbelievable. When they saw the changes along the fault line they could understand how they came about through both world views. Students could identify the surface features along the Wellington fault and connect it to the Science and local history of tangata whenua."

Using these experiences, Charmaine has now created a L1 unit that aligns with the new standards CB1.2 and S1.2. (*This will be covered in detail in an upcoming feature article.*)

#### Charmaine's message on the role of teachers

Charmaine notes, "Teacher pedagogy needs to draw on student strengths and connecting their knowledge and experiences with classroom learning. Teachers need to be flexible in their teaching, and remember that one size doesn't



Photo shared by Charmaine Russell from a trip to Otari Wilton Bush reserve at the pā harakeke 1 site with her students. They went there to get student iwi heirloom harakeke varieties for the establishment of their community pā harakeke with the support of mana whenua kairaranga.

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fit all. Matauranga Māori is a necessity to build student identity in the classroom. Teachers are facilitators of learning, and it's our job to provide the means for educational exploration and acquisition."

### ACKNOWLEDGING HER BACKGROUND

Charmaine identifies herself as part Māori, growing up in a bicultural setting in Lower Hutt. "The big issue for me was that for the Māori, I wasn't Māori enough, and for the pākehā, I wasn't pākehā enough. So, my identity was constantly in flux. It was difficult being a Māori who is forced into a world and a schooling system that you don't really fit into. I felt a keen sense of necessity to fit into both worlds and so I chose which shade I was in different situations. The reason behind sharing this story is that there are many students out there in today's society who are in the same situation. We cannot change the world, but treating mātauranga Māori with integrity is necessary to build student identity."

Charmaine would like to acknowledge her immediate whānau and wider whānau, Wainuiomata High School, alongside all those who have supported her and her department. Especially Janette Melrose WHS principal for giving her the opportunity to lead her department.

### NGĀ KUPU (USING TE AKA MĀORI DICTIONARY)

Kaiako: Teacher Mātauranga Māori: Body of knowledge generated within a Māori worldview Tikanga: Correct procedure, customs Karakia: Māori ritual chant Ako: Teach, learn Rongoā: Traditional medicine, cure Harakeke: Flax Kai: Food, meal Kina: Sea urchin Pātiki: Flounder Pāngarau: Mathematics Pūtaiao: Science Ākonga: Student, learner Taniwha: Water spirit, often regarded as guardians Pūrakau- legend Pakiwaitara-narrative or legend

Thanks to Zane Catterall for reviewing.

### **REFERENCES FOR CONCEPTS**

- 1. Harvesting harakeke
- 2. <u>Tuakana-teina</u>: Buddy learning where an experienced student guides a less experienced student

### HELPFUL RESOURCES

- 1. The <u>connected series</u> try these titles- The Science of Rongoā, Learning from the Tangata Whenua, Reconnecting the Brain, Kauri Dieback, TeTapa Ingoa
- 2. Wellington fault video: Where to explore the Wellington Fault
- 3. NZASE article for more on mātauranga Māori: <u>Science teaching and learning at the interface.</u>