

# Incorporating Mātauranga Pūtaiao into NCEA science

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article

**K**ath Haines is assistant HoD and Specialist Classroom Teacher at Wellington East Girls College. She is leading the science department's exploration of incorporating Mātauranga Pūtaiao into their science programs. All staff are committed to including Mātauranga Pūtaiao into one unit every year in every course they teach.

"We are also incorporating whakawhan-aungatanga and tikanga such as karakia into classes," she says. "Most of the department are Pākehā so we're going slowly – we are developing a shared vocab, learning te reo, and helping each other with ideas."

Kath was concerned that the large number of Māori and Pasifika students in streamed classes could not go on to sciences in Y12. In 2020 she introduced a new Y11 course, where she wanted to pay attention to Mātauranga Māori and Pasifika indigenous knowledge, and to interrupt streaming.

Mātauranga Pūtaiao are the aspects of mātauranga Māori concerned with understanding of the natural world, historically and today. This knowledge belongs to hapu and iwi and is place-based - it is generated by living in Aotearoa and specific to an area.

Mātauranga can be recorded in pūrakau, waiata, mōteatea, haka, and whakatauki. Mātauranga Pūtaiao is explained by a Māori worldview which is holistic and interconnected.

Kath says she has learnt that "Mātauranga pūtaiao is both similar and different to Western

Science. They do not always seek to do the same thing. One should not be given greater status than the other – both have authority. Multiple scientific perspectives can help us solve problems in our world."

## Four units

In 2020 Kath's SP100 course included four units, although one on mechanics was postponed to 2021 due to COVID.

In the **Geology** unit, students researched an eruption while also learning about the codification of knowledge. They explored waiata, mōteatea and the pūrakau of Ruauumoko as well as Samoan songs, kusi stripes and tattoos.

To teach **Earth Science**, Kath used lots of modelling and a volcanologist guest speaker / role model. For the assessment with S1.16, students researched in groups ("they liked this") and made individual brochures about the eruption of Matāvanu in Samoa in 1905, or Whakaari in 2019.

For **Chemistry**, students explored fuels and climate change and indigenous knowledge about the environment. They looked at

Māori and Samoan ways of monitoring and predicting weather.

They also explored climate change in the Pacific and the resulting activism in the islands. Students completed a series of practicals, short research and made a storyboard. For the assessment with S1.6, students made a poster.

*Year 10 students learning to sail in Optimists.  
Photo: Sharon Edgecombe*



*The island trader SS Talune, pictured in 1890, which brought influenza to Samoa in 1918 when the New Zealand Administrator did not quarantine the ship.  
Photo: David Alexander De Maus, Wikimedia.*



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In **Biology**, students studied hauora and colonisation. They explored Te Whare Tapa Wha and Fonofale models of health. As guest speakers, Kath brought in Māori medical students with knowledge of both hauora and western science, as well as COVID.

For assessment with B1.2, students researched an issue affecting Māori or Pasifika health, and what they could do. They did this in groups during lockdown and gave a presentation. Topics selected included the effect of the influenza pandemic on Māori in Aotearoa and in Samoa (with a focus on the role of SS *Talune*, page 1) and its relevance with COVID; or colonisation and diabetes or smoking.

## 2021 topics

Kath is exploring other topics this year: -

- **Fire** – Mātauranga around fire, pūrakau about Maui, knowledge about the best trees for burning, and how this knowledge was generated. She tried this with a Y10 class.
- **Voyaging** – how Māori and Pasifika navigated using a star compass. The class zoomed with the Samoan Voyaging Society, who teach traditional navigation.

Worser Bay Yacht Club tutors taught the ākonga to sail in Optimists, as part of their program called Kōkōkaha (powered by the wind). [Her assessment task](#) uses a Pacific Studies achievement standard on understanding indigenous knowledge.

## Consultation

Kath read and consulted widely to prepare for this course. She found great professional learning in Ocean Mercier's Level 2 paper at Victoria University. ([Waikato University has a similar paper](#) while VuW [has a paper at each level.](#))

Mercier's course started with a thought experiment – imagine you are on a remote jungle-covered island. What are the things you need to know to survive? In winter? This developed an understanding of how a body of knowledge grows. The course included maramataka, Māori astronomy and harakeke. Kath also found [this Otago University symposium](#) useful.



The Fonofale model of health.

Kath also suggests “readings especially Ann Milne; te reo courses; finding your school’s connection with mana whenua; and talking with students and whanau groups”.

## Results

In 2020 Kath had 18 students in the class, including some who were there by accident not choice. At the end of the course a survey showed 90% of the students thought the course helped them learn about Māori and Pasifika science, language, careers and issues and 75% were taking a science at year 12.

A Māori student said “SP100 teaches me about science about New Zealand and the Pacific Islands and it helps connect me to my culture which I haven’t really been doing, so this is a good chance for me to do it.” A Pasifika student said “I’ve learnt a lot about my culture along with Te Reo Māori culture. I found out things I never heard about before.”

## Ngā Kupu

**Karakia** – Prayer or ritual chant  
**Mātauranga Māori** – Body of knowledge generated within a Māori worldview  
**Mōteatea** – Traditional laments  
**Pūrakau** – Traditional stories  
**Tikanga** – Correct procedure, custom  
**Whakaari** – White Island, Bay of Plenty  
**Whakatauki** – Proverb  
**Whakawhanaungatanga** – Process of establishing relationships.

From Te Aka Māori Dictionary



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