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resource

Heroic Pacific knowledge

Some schools are investigating how to better engage with Pacific indigenous knowledge systems in their science teaching. NZASE Science Communicator Mike Stone explores one school's journey in this introduction.

An enduring competency

NZCER recently published a foundation document on which to build science curricula (Hipkins et al, 2022). One of their four enduring competencies is about drawing on different knowledge systems to view, understand and act in the world as engaged citizens.

It is important that students see each knowledge system as valuable on their own terms, without comparison or assimilation. Weaving indigenous knowledges and science together can help students understand their world more deeply, while valuing other ways of knowing.

Tapasā

Tapasā is a framework to guide teachers and leaders on engaging with Pasifika knowledge systems in their practice. The Tapasā Framework can be used to build the capability of leaders and teachers of Pasifika learners across all education sectors.

Tapasā has three turu (or cultural competencies); turu 2 is based on establishing and maintaining collaborative and respectful relationships and professional behaviours that enhance learning and wellbeing for Pacific learners.

A key relationships concept is *teu le va*, which can translate to maintaining and nurturing the spaces between people and place.

Rather than isolated specks of land in a vast ocean, Pacific peoples see their region as a web of islands connected by voyaging pathways. Pacific people are thus connected, rather than separated, by the sea.



A key Pacific concept, then, is *va/va'a/vaha*, the space between us. In Pasifika perspectives, that space is never empty, but made up of relationships and connections. Pacific cultures are viewed as networks of relationships, rather than of individuals.

Part of a project by Beilene Lealofi about making fagu'u Samoa, coconut oil.

The PLD

Tui Tuia Learning Circle provides services and programmes to strengthen the capability and resilience of educators. They work alongside leaders, teachers, and school communities, co-constructing Professional Learning & Development (PLD) programmes.

Based at the University of Auckland's Epsom campus, the Pacific-led team works with schools wanting to centre Pacific indigenous knowledge systems, guided by Tapasā and the [Action Plan for Pacific Education](#) (APPE).

The team uses Kakala (Johansson-Fua, 2014) to enhance inquiry and critical reflection in the schools and ECEs with which they work. Johansson-Fua used the metaphor of Tongan women and children making a kakala/lei to conceptualise teaching and learning. It is a framework for recognising Pasifika world views and valuing their philosophies, values and customs (see next page).

The learning

Caroline Taripo-Keith, a Tui Tuia facilitator, has worked with St Peter's College (SPC) in Palmerston North this year. The focus was developing an understanding of how to view and validate science through a Pasifika lens.

The journey started through an annual community initiative, [Pasifika Fusion](#), which showcases Pasifika

Handmade Tongan kaho kaka, Hawai'ian Hut, USA.

Adapted from Johansson-Fua's Kakala framework.

| Kakala aspects | Meaning when making kakala | How Tui Tuia facilitators use this with teachers |
|-------------------------------------|--|---|
| Teu (preparing) | To prepare. The focus is on who the kakala is being made for and why. | Identify the strengths, possible next steps and aspirations for their Pacific learners and communities in relation to each turu and indicator of Tapasā and APPE. |
| Toli (gathering) | To pick a flower. The focus is on selecting the best flowers and leaves needed for making a particular kakala. | Create a team to collect and discuss relevant data about the school community (including feedback and voice). Identify strengths and possible next steps. |
| Tui (weaving) | Thread/sew the garland. Tui is the actual making of the garland; the time it takes would depend on the complexity of the kakala. | Discuss the baseline data in relation to the three turu and indicators of Tapasā and APPE. |
| Luva (gifting) | A gift from the heart. The gifting or giving of the kakala to the person for whom it was made. | Use the knowledge of the collective to plan and carry out deliberate actions to address identified needs. We are gifting our knowledge and expertise. |
| Mālie (appreciation) | Bravo, well done to performers wearing the kakala. Appreciate their skill and effort. | Identify and evaluate new learnings, and connections to practice. Then affirm and celebrate them. |
| Māfana (overwhelming warmth) | Māfana means warmth. The audience touched emotionally, to the point where they join in. | Evaluate and check for transformative impacts on learners, participant practice, ELS/school systems. |

talent through cultural and academic categories for secondary schools in the wider Manawatu.

Caroline worked with teacher Nara Clavelle on the science. This year the theme was 'Heroes past and present' and the Science topic was: In what (heroic) ways has Science and Technology addressed issues and challenges for our Pasifika communities?

This led to a collaborative idea of creating a presentation that challenged western science. Students had to prepare science boards – three panels with information and images. They wanted to explain an aspect of Pacific knowledge and their hero. Some examples:

✧ **Year 11 student Junior Faiao Pelasio** investigated the herbal medicine of fue sina (beach pea, *Vigna marina*), its historical and current uses in treating illness and the spiritual and cultural beliefs involved. His hero was his great aunt, who used this plant in traditional Samoan fofo (massage).

✧ **Year 12 student Rosalia Siu** studied the nonu plant, a traditional herb commonly used in Tonga. Her hero (Mum) gave her insight into traditional uses and practices she recalled as a young child.

✧ **Year 10 students Melenie Seko and Jennifer Sefilino**



researched Pacific navigation and the use of star maps, wind maps, wave reflections and the feel of ocean currents to guide the vaka.

Their hero was Mau Pialug, one of the last traditional navigators from the Caroline Islands. The girls concluded that their ancestors were mathematicians, technologists and scientists, a realisation that they are connected to scientists.

✧ **Year 9 student Veronika Seko** explored the science of coconut oil and its use through the traditional Samoan tatau of the dense pe'a, covering a man from waist to knee. The design of the pattern tells the story of who they are. She learned that fagu'u (coconut oil), was used to moisturise the

tattoo and reduced itching and inflammation. Her hero was her uncle who had his tattooing ceremony done at Te Manawa Museum in Palmerston North.

✧ **Year 10 student Beilene Lealofi** used fagu'u Samoa and the chemical process involved in making it, through memories of her grandmother in Samoa. She recalls the process of each step from beginning to end and used this to investigate the chemical process. Although these processes are taught in class, the context in which it is explained does not connect.

Beilene's engagement using her context helped her

Mau Pailug using a star compass to teach navigation to his son in 1983. University of Hawai'i, Mānoa.



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understand the science involved.

This information was not easy to find. Several students got their information from phone calls to relatives here or in the islands, speaking in their first language, which also led to discussions about the translation of that conversation.

One student asked her nana to take photos and her cousin to make a video and these were included on her science board.

During the process of learning about herbal remedies, one student said “this information is hard to find, how do we know that it’s real, that it’s right?” One of the other students replied: “Would your nana give you something that was poisonous?” They had a way to validate the knowledge.

Nara says, “Building connections with the community is hard work but the rewards are invaluable. An example of this is our Pasifika Camp, co-organised with parents. Co-construction of learning with families is foreign in mainstream schooling but not for Pasifika.”

“Workshops included: preparation of food through the Samoan umu (earth oven) and Tongan ‘otai (coconut milk and pulped fruit drink); Pasifika contemporary dance; singing; and making ula-lole (necklaces made of sweets).”

“Parents led the process of the food preparation workshops hoping to give their students a taste of Pasifika, knowing a lot of them had not experienced this before. Student participants rotated through the workshops over two days and at the end celebrated with their families with an umu feast, singing and presenting parents with ulu made by their children.”

The teaching

Reflecting on this journey, Nara and Caroline found that it was important to:

- ✂ **Make relationships central** – For families to share their knowledge required trust. Developing a stronger relationship with families also helped students connect with their learning.
- ✂ **Be deliberate** – Centring Pacific knowledge meant the unit needed to be co-designed with the students and their families. They were the experts, “the navigators in this space,” as Nara said.
- ✂ **Be brave** – This meant: not being confined by curriculum and time, but letting control go to the experts; challenging western science and creating a context where Pasifika students can see themselves in the Science curriculum. “If there is no connection there is likely to be no engagement,” they said.

The last words go to Nara and Caroline: “the dedication, time, and energy that we poured into



Junior’s great aunt applying fue sina extract to the skin to relieve inflammation and soreness. Family photo.

this endeavour bore fruit. The SPC students were not only engaged in science in a way never seen before, but their families also felt more welcome in the school.”

“This open dialogue between families and teachers became a testament to the impact of our journey, demonstrating that when science is made relevant, personal, and meaningful, it can truly transform lives and communities.”

References

- Hipkins, Tolbert, Cowie & Waiti, 2022, [Enduring competencies for designing science learning pathways](#). NZ Council for Educational Research.
- Fua, S. U. J., 2014, [Kakala research framework: A garland in celebration of a decade of rethinking education](#). USP Press.
- Tui Tuia Learning Circle, 2023, [Flipping the script: Indigenous Pasifika Science](#), University of Auckland, 57m video about their SPC work.

Ngā Kupu

Ā’iga – Family (Samoa)

Ako – Teaching & learning, formal & informal (te reo Māori & several Polynesian languages)

Kahoa kakala – Flower lei or garlands for the head or neck (Tonga)

Pe’a – Traditional male tatau, waist to knee (Samoa; 1m31s into video)

Talanoa – Exchange of ideas face-to-face, dialogue (several Polynesian languages)

Tapasā – Compass (Samoa)

Tatau – The origin of the word tattoo (several Polynesian languages).



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