Place-based learning

Reflections on the value of repeated field trips

DIANNE CHRISTENSON, WITH JOSIE ROBERTS AND ROSE HIPKINS

This Q&A is based on a conversation with primary school teacher Dianne Christenson about her use of place-based learning in science. The idea for the column took shape as Rose Hipkins listened to Di report back to her co-researchers in a Teaching and Learning Research Initiative (TLRI) project team meeting. Di was talking about her experiences of taking her class to a neighbouring beach, not once, but multiple times. This pricked up the ears of Rose, who was writing a book about complexity theory in education (Hipkins, 2021). Rose wondered if revisiting the same place over time might give students a fuller sense of its ecosystem and a deeper connection to it. *Set* editor, Josie Roberts, followed up by asking Di some of the questions Rose was keen to know more about.

Can you outline the nature of the two TLRI projects in which you have been a team member? Why did taking part appeal to you and what is your role?

The first TLRI project was called Citizen Scientists in the Classroom: Investigating the Role of Online Citizen Science in Primary School Science Education. Dayle Anderson approached me early on and I helped the team shape up the project application. Being part of a multidisciplinary team really appealed to me, where we could each bring our expertise. We were interested in whether the introduction of an online citizen science (OCS) project, in association with a school science topic, would benefit the children and their learning. The other part of the project looked at the human–computer interactions within the classroom environment.

I was one of the team's four classroom teachers. We had all been through the Science Teaching Leadership Programme. Our role was to look at a topic we were already teaching and choose an OCS project that might supplement it to improve the learning. Our school was looking at freshwater that year and I was doing a topic on plastic pollution, so I chose an OCS project called The Plastic Tide. The TLRI was very successful, with clear learning benefits for the students as well as for the teachers. From it we made videos for Science Learning Hub and uploaded our planning for other teachers to use.

The second TLRI project, with a similar team this time led by Cathal Doyle and Cathy Buntting, is called On2Science—Multiple affordances for learning through participation in online citizen science. It looks at the progression of students' science capabilities and

https://doi.org/10.18296/set.0205

how the use of an OCS project links to—and develops—students' learning in the digital technologies curriculum. It also investigates the impact of our teacher practice on human–computer interaction in the classroom. Again, my role in the second project is to be a classroom teacher and support learning through an OCS project while having a strong focus on science capabilities and, also this time, a clear link to the digital technologies curriculum. The fact that we've got such a wide range of specialties in the TLRI team has been fantastic. The collaboration between teachers and the support we have had from the researchers has been phenomenal. We learn from each other.

The projects have given me the opportunity to see my practice through other eyes and to find ways to improve. It's been a big learning curve for me around digital technology, especially when everything became very compressed for us to finish our OCS project at the end of the 2020 school year. It became clear that basic digital technology teaching earlier on would have benefited the children. So, I tried to address that. The projects have also helped me deepen my teaching in science. I've learnt how to use the science capabilities better as a method to support students' science learning. That goes along with a better appreciation of discourse in the classroom, having a very specific way of talking and questioning in the classroom. It's very similar to the language in Developing Mathematical Inquiry Communities. We started talking this way in science, then in mathematics, and then basically moved it right across the curriculum. It's a change of pedagogy.

Can you tell readers about the specific online citizen science project that you chose for your class? What led you to it?

I teach a Years 4–6 class in a small primary school with around 60% Māori students, 20% Pacific, and the remainder being Pākehā and Asian. In our school we choose an atua to guide our learning each year. In 2020, our Atua for the year was Tangaroa, god of the ocean. We were already involved with Mountains to Sea Wellington, in a programme called Love Rimurimu, which is based around seaweed. From there I had a really good look into related OCS projects. We've found, especially with lockdown, a larger range of OCS projects are starting and finishing with increasing rapidity.

At first, I chose Floating Forests, which is an international project based out of America. It asks people to trawl through satellite photographs to help map Giant Kelp. However, it didn't really engage me or the children because it wasn't local and the kelp was so tricky to identify. I settled on a project managed by Otago University called Marine Meter Squared. It was a close match with our seaweed topic but it expanded it to include biodiversity in our coastal areas where we were specifically looking at the rocky shore. It's designed for student use, has great resources, is engaging, and supports all of the science capabilities. The capabilities I focused on were: gather and interpret data; use evidence; engage with science; and interpret representations. Also, the Marine Meter Squared doesn't have an endpoint, which was a real positive coming off the back of pressure of the Plastic Tide project.

Given that your topic was seaweed, your students could have just engaged with online resources and perhaps brought some samples into the classroom. Why did you think it was important to take the students to the place that seaweed comes from as part of this work?

Lots of reasons. With such a high percentage of Māori whānau we work hard to bring te ao Māori into our teaching. You build your wairua and you build children's wairua through being in a place and by building connection. I did start by bringing some seaweed into the class to familiarise the students with three species from the south coast of Wellington. The children could then identify a Giant Kelp or a Neptune's Necklace but there was a sense of "Why do I care?"

Part of Love Rimurimu is an opportunity to take children snorkelling. That's a deep dive (literally and figuratively) to see seaweed in situ. When you become part of the marine environment, connection grows enormously. The children connect in a visceral way, and I believe that is wairua. By being in the water, the children start to see the environment, the species that live there, and the effects of people. The children care. It becomes meaningful to them.

You cannot replace the excitement of a child, either in a rock pool or the ocean, finding a Clown Nudibranch sea slug, or having an octopus swim beneath them. That experience stays with them. For some children, the environment becomes their passion or leads to their career. That was a consistent story from the scientists we worked with. They all said an early learning experience set off a passion for life. Passion can only develop from being exposed to something.

You didn't just go to the beach once. You took the class back several times. Why? What additional learning benefits did you anticipate or notice?

We were able to make eight or nine trips out to Princess Bay. Every single trip built on the prior experiences and deepened our learning and our connection to place.

When we began Marine Metered Squared, we first practised quadrats in class and on the school field. The first time at the beach went alright but, because the

children had been working with real scientists, they wanted to produce quality work. They realised that they weren't picking up on small details of difference between some related species. Returning to the beach gave an opportunity for repeated practice. For example, the children had developed an exceptional knowledge of seaweed but still needed opportunities to practise using our identification tools accurately for other species.

Returning to the beach also gave them a good insight into seasonal variation. Collecting the data even a month apart showed big differences. For instance, they'd say, "We found 60% of the rock pools had Crystalline Algae last month but now we can't find any of it." The children came to understand the lifecycles of species and the relationships between them at different times of the year.

Also, it's fun. One bitterly cold day it was marginal for an outing, but it was memorable. From that we got incredible writing, poetry about the weather. We also found out who was most passionate—who stayed out there the longest looking for spores on seaweed.

How did you maintain engagement even for the less passionate children? How did you guide each session so that students continued to expand their knowledge and understanding?

Not everyone remained entirely engaged and that was fine. There was never any pressure to come along. We varied the focus of the trips and tried to add some fun into it. If the weather was good and it was lunchtime, they could go for a swim or build sandcastles. We always had games and free time to explore. We collected kaimoana, mostly seaweeds, to cook up. We had starfish size competitions. But the students who were passionate just wanted to sit and watch the rock pools or search out invasive seaweed, which we'd collect to eat or take back for the school gardens.

You've spoken about involving scientists and experts. How did you find them and brief them to get the best value for student learning? What did you hope to achieve?

I found them through a range of avenues. Some we met through Curious Minds and Love Rimurimu. Another was an algae specialist from Niwa who I randomly bumped into one day. Once we got chatting about our project she asked, "Would you like me to come out with your class one day?" I also follow people on Twitter. I'm not afraid to ask. Many adults want to share their passion with children.

Also, there is a variety of ways for experts to interact with students, whether it be a 30-minute Zoom interview or a fieldtrip. Either way, it takes time to prepare and it has to be purposeful. The children need to figure out their questions. Some experts do talk above the children's heads. Then it's a matter of me stepping in to help with the interpreting. Or perhaps I might let them know, "I don't think the children got that, could you put it another way." It takes confidence in yourself as a teacher to know that you've got learning goals and to make the most of the opportunity for students you've got to get the information presented in a way that meets those goals.

It gets the children to want to produce quality because they start to see themselves as scientists. They see that what they are doing is part of a bigger picture and makes a difference.

It is a lot of work to take students out on a trip. How did you manage the logistics? Was it worth it in terms of learning benefits?

There is organisation involved but I love getting outside. It's how I love to teach, to be outside with space. One of the advantages of going back to the same place is that the risk identification assessment management safety plan (RAMS) largely stays the same. We were lucky because we had some school prize money for buses. Cost and available adults are seen as barriers for most schools.

The trickiest bit for us was getting enough adult helpers, especially going near the water. I asked all sorts of people—friends, ex-principals, family members. We also had two teachers plus teacher aides. For snorkelling, we needed a 1:2 adult:child ratio but that's the trip we were turning people away on. Many of our Māori and Pacific dads collect kaimoana. They are very keen to be involved in developing a passion for the ocean for their kids. They will take days off work to come as long as we're organised ahead of time. Even when it was weather dependent they made it happen to share in that learning experience with their children.

Do you have any thoughts about including mātauranga Māori and indigenous knowledge systems in your teaching and learning that you could share?

Having a year-long focus on an atua, I think, is important because it promotes learning in depth. I'm still on the journey of learning about mātauranga Māori and it will never finish because I'm Pākehā. The first step in learning about mātauranga Māori, for me, is learning te reo Māori. From the language you can gain a little insight into the mātauranga. An example I can give is that, until recently, I didn't have a solid appreciation and understanding of mōteatea as mātauranga. My reo is not good enough yet to get understanding directly from what is embedded in the kupu reo within the mōteatea. I have to ask for it to be interpreted and explained to me.

Koraunui School is fortunate to have a bilingual unit with teachers who are incredibly supportive and receptive to sharing their knowledge with others. I think as Pākehā teachers we do need to put ourselves in that place of being the student. Being the learner can be a hard place to stand but it's a good place to stand. More of us should be acknowledging how our learning journey can uplift the mātauranga and its importance in our kura.

With my teaching, I first look at the ethnicities of the students within my class. I initially start out by trying to incorporate their languages into the learning. For the Tangaroa focus I began with a PowerPoint of different species in English, Māori, and Samoan. To get the Samoan I needed to ask the parents in my class about the names of different species and why they're important. By bringing in the different cultural knowledge through the people around us we can learn from them; for example, asking "Why are turtles important in Tongan families, or in your own knowledge system?" It's about building that picture within their own culture for the students.

A lot of children don't relate to what we call science initially until we can show them, in their own cultures, where it is and what it is called. They have to recognise it in themselves and in their own history before they can recognise it in another knowledge system. I think you also have to recognise that Western science and mātauranga Māori are different systems. I'm not convinced myself that they can be taught as the same thing.

It sounds like you recognise and respect that there are different knowledge systems. Are you saying that you don't necessarily use one knowledge system to explain the other, but you think it's importance to have information coming from different knowledge systems about the same subject area?

Yes. The students can then build on all of their knowledge systems through their learning at school. Doing so gives all of us a better perspective on the world. We can look at a topic from a variety of viewpoints.

Thanks for making the time for *Set*'s Q&A. Is there anything else you'd like to say on the topic of place-based learning before we conclude?

Just that I think that it's human nature to be connected to a place in some way. We can all look back in our own histories to see our connections. That's especially true in Māoridom. It's what a pepeha is all about. I believe that the acknowledgement of a place, and of belonging to a place, is important. The more we can develop that love of a space or a place with children, the better the future for all of us.

Notes

1. The first project is published in Set (see Pierson et al., 2020).
2. https://www.royalsociety.org.nz/what-we-do/funds-and-opportunities/science-teaching-leadership-programme
3. https://www.zooniverse.org/projects/theplastictide/the-plastic-tide
4. https://www.loverimurimu.org/
5. https://www.zooniverse.org/projects/zooniverse/floating-forests
6. https://www.sciencelearn.org.nz/resources/2730-marine-metre-squared

References

Hipkins, R. (2021). *Teaching for complex systems thinking*. NZCER Press. https://doi.org/10.18296/bk.0101

Pierson, C. M., Anderson, D., Luczak-Roesch, M., Doyle, C., Glasson, B., Li, Y., Brieseman, C., Boucher, M., Christenson, D., & Coton, M. (2020). Developing science capabilities for citizenship through participation in online citizen science (OCS) projects. *Set: Research Information for Teachers,* (1), 19–26. https://doi.org/10.18296/set.0157

For many years, **Dianne Christenson** was a teacher at Koraunui School in Lower Hutt. She has recently moved to Whareama School in rural Wairarapa to teach tamariki close to where she lives. Di has a Masters in Science and is a member of the New Zealand Association of Environmental Education. As part of the Science Teaching Leadership Programme, Di was hosted by the School of Biological Science at Victoria University of Wellington. She was awarded the Prime Minister's Science Teacher Prize in 2016.

Email: dianne@whareama.school.nz