

# Partnerships

Building a future-oriented science education in Aotearoa New Zealand



 **NZCER**  
Rangahau Mātauranga o Aotearoa

Images (L-R)

Dr Marc Schallenberg (University of Otago) shows Ngāti Porou secondary students how to take a mud core sample from the Uawa river (Science Wānanga case study).

Scientists, parents, and students examine marine life at Ngaio School (The Clinic case study)

Students from James Cook High School carry out dissections at AUT as part of Counties Manukau DHB's "Health Could B4U" programme (Health Science Academies case study)

## Partnerships presentation by Rachel Bolstad

This afternoon we're going to look at partnerships in science education.

Partnership is one of those words that mean different things to different people. Today, as we think deeply together about how we might build a future-oriented science education system - what can we hope to gain from this next hour?

First of all, let's look around at who is in this room today. There are so many different people who care about young New Zealanders having the best possible opportunities for learning in and about science - teachers, scientists, science communicators, tertiary science educators and students, researchers, those involved in educational and science policy, and parents and community members, to name but a few.

Today we have a special opportunity to connect with each other as partners in the task of building a future-oriented science education system. But what exactly does that mean - and what does mean to work on this challenge in partnership?

In their 2002 book on educational Partnerships, Helen Timperley and Viviane Robinson<sup>1</sup> argue that entities are truly in partnership when they

- each accept some responsibility for a problem or task, and
- establish processes for accomplishing the task that promote learning, mutual accountability and shared power over relevant decisions.

I think these are important thoughts for us to bear in mind. Do we in the room today have a shared view of what it will take to create a more future-oriented science education system? Can we start to formulate a shared view? Do we know what kinds of processes can help us work together as partners in this task - including those of us in the room *and* those who aren't here today? How will we share power to make decisions together, and how will we be accountable and responsible to each other?

We are going to have a lot more time this afternoon to chew over these kinds of questions, but for now let's turn to research and examples of some of the ways in which people across the education and science communities are already connecting and working together to strengthen and enhance students' science learning.

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<sup>1</sup> <http://www.nzcer.org.nz/nzcerpress/partnership-focusing-relationship-task-school-improvement>

# Schools and the science community

## Ministry of Education contract research

### 2011-12

- Teacher surveys (n=301),
- Science community surveys (n=43)

### 2012-13

- Five case studies
- Focus group interviews

Literature review and synthesis 

### Two reports

**Science community engagement with schools:  
Scoping the field (2012)**

**Strengthening engagements between schools  
and the science community: Final report  
(2013)**



In 2012-13 we undertook a contract project for the Ministry of Education to look at how schools were engaging with the science community.

This slide gives you an overview of what the research comprised, including surveys of teachers, science community providers, five case studies of engagements between schools and the science community, and a review and synthesis of literature.

All of this work is reported in two free-to-download reports<sup>2</sup>, and some of you may have come across this work already.

It was a big piece of work which provided both a deep and broad view of school-science community partnerships.

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<sup>2</sup> First report: [www.nzcer.org.nz/research/publications/science-community-engagement-schools](http://www.nzcer.org.nz/research/publications/science-community-engagement-schools)  
Second report: [www.nzcer.org.nz/research/publications/strengthening-engagements-between-schools-and-science-community](http://www.nzcer.org.nz/research/publications/strengthening-engagements-between-schools-and-science-community)



## The case studies



- Otago University Science Outreach
  - Chemistry outreach programme
  - Science Wānanga
  - NZ Marine Studies Centre
- LENSscience – Auckland
- The Clinic at Ngaio School – Wellington
- Dinosaurs and Disasters Geocamp – Hawkes' Bay
- Health Science Academies – Sth Auckland



The second report in particular looked closely at five diverse examples of schools engaging with the science community, and we are lucky to have Sally Carson (NZMSC) and Jacquie Bay (LENScience) here to represent parts of two of those case studies. If you have the time I really recommend reading the full report for the full story on these case studies and the themes that emerged across them.



At the end of the project we worked with the Ministry on this set of four summary pamphlets which recut themes from the research for slightly different potential user groups.


You'll find these summaries up on TKI and I'm going to run through them to pull out just a FEW of the key ideas, learnings, and questions.

SUMMARY  
1

## SCHOOLS & THE SCIENCE COMMUNITY

# A RATIONALE FOR FUTURE-ORIENTED ENGAGEMENTS

**WRITTEN FOR THE “BIG PICTURE” THINKERS – The “why” questions**



**Why** should schools engage with the science community?

What if close engagement between the education and science communities **was central** to school science learning?

Are we aiming to support **“business as usual” science education**..... or are we looking for **transformative change** in the way students encounter and engage with science?

The first summary - a rationale for future-oriented engagements - is aimed at the big picture thinkers and it addresses the big picture questions. For example, why should schools be engaging with the science community? It's widely perceived as a “good” thing, but what sorts of engagements should schools be aiming for, and why?

What if close engagement between the education and science communities **was central** to school science learning?

Are we aiming to support **“business as usual” science education**.....that is, bolting on or plugging in relationships with the science community to fit the way curriculum and teaching has always happened in science - or are we looking for **transformative change** in the way students encounter and engage with science - using relationships between the science and school communities to rethink the way we plan and organise curriculum and teaching (& assessment?)

In this summary we argue that future-oriented science education must be relevant, authentic, and engaging, and it should open doors to future possibilities. Our research suggests an ideal scenario might involve schools, the science community, and perhaps the wider community collaborating to shape science learning opportunities that are relevant and authentic from **THREE** perspectives

- the perspective of the science community
- the perspective of learners
- the perspective of the wider community/society.


SUMMARY  
2

SCHOOLS & THE SCIENCE COMMUNITY

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SCHOOLS' GUIDE TO GETTING CONNECTED

WRITTEN FOR SCHOOLS (AND THOSE WISHING TO CONNECT) – The “how” questions



- Schools **already** connect with the science community through various programmes, projects, initiatives
  
- **Key people** in this ecosystem include
  - **science-connected teachers**
  - **science community expert coordinators/connectors**
  - **Scientists and tertiary students**
  - Leaders in the community – **people with mana** who have the power to inspire and mobilise resources
  - **Family and whānau**
  
- **Access + Equity:** urban schools and high-decile schools more likely to have access ...

The second summary - school's guide to getting connected - addresses some of the more pragmatic issues and questions.

This summary looks at some of the many different ways in which school already connect with the science community, and identifies some of the key people who play a significant role in these initiatives getting started, sustaining, and having an impact.

For schools who are not yet readily able to access the knowledge and resources of the science community, one place to start would be to identify how to establish a network of support by working through some of these key players in the system.

One important challenge for all of us who are concerned about building a future-oriented science education SYSTEM is the fact that some schools are already more connected, and already have greater access to the people and resource networks in the science community, while others don't. Teachers' confidence with the nature of science (NOS) strand of NZC also interestingly correlates with their “active use” of the science community's resources - the more active users are also those who expressed more confidence with the NOS strand

SUMMARY


# 3

SCHOOLS & THE SCIENCE COMMUNITY

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## KEY ELEMENTS FOR PARTNERSHIP

WRITTEN FOR ALL WHO WANT TO MAKE PARTNERSHIPS WORK! – “how” AND “why”



- Benefits for learners:
  - Seeing science in authentic contexts
  - Role models
  - Up-to-date science knowledge, expertise, resources, environments
- Important for partnerships to have **shared purposes**
  - decisions about contexts and opportunities for learning can be made together
  - initiatives can grow, evolve, and change as partners see new opportunities or needs arising
- **Connectors and coordinators are critical**

The third summary - Key elements for partnership - is more “how” and “why” stuff for those who want to make partnerships work.

It looks at some of the many different reasons WHY people think science community engagements are good for learners. One really important idea from the research was how important it is to have **shared purposes at that big picture level - this enables the actual details of a programme or project to be shaped together - it also allows for programmes to grow and evolve.**

A second key idea is the absolutely critical role of people who are “connectors and coordinators” - people who understand both the science community world and the education and schooling world and have connections and credibility in both spaces.



SUMMARY
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## SCHOOLS & THE SCIENCE COMMUNITY

### STRENGTHENING ENGAGEMENTS ACROSS THE SYSTEM

WRITTEN FOR SYSTEM AND POLICY LEADERS – The big picture “how” and “why” questions...



- No shortage of programmes, initiatives, and opportunities – but some schools are able to forge these connections more easily than others.
- Too few opportunities to join up efforts *across the system*.
- The importance of bedding in “deep” relationships and partnerships
- Communities/schools/institutions are permanent/ongoing - contracts are often short-term!
- Need cross-sector policy coordination

The last summary is targeted at system and policy leaders and tries to convey some of the big picture “how” and “why” questions at the level of the whole system.

The big message here was that there is no shortage of programmes and initiatives - but there are far too few opportunities to join up efforts across the system.

There are also some important messages about the role that deep relationships can play in insulating good programmes from the vagaries of short-term contract funding cycles or shifting policy priorities.

One case study participant shrewdly noted that contract funding often has entry and exit points, communities, as well as organisations like schools and universities - are permanent and ongoing, as should be the kinds of relationships that form between them.

Finally there is a need for better coordination across the relevant policy areas that fall in the spaces between the education and schooling system, and the science and technology communities in New Zealand.