



Primary Science Hui Greymouth Programme 30 September 2019





- Monday 8 July
- Coffee from 8:15
- 9am start
- 5pm finish
- Greymouth High School
High St
Greymouth 7840

8:15	Coffee from 8:15					
9:00	Welcome/Introductions					
9:30	Sabina Cleary	Brigitte Glasson	Andrea Soanes	Jenn Corbett	Sandy Robbins and Cathie Johnson	Benjamin Moorhouse
	Kaha Education	Victoria University	The Science Learning Hub	Science Teaching Leadership Programme	NZCER	Department of Conservation
	Weaving everyday experiences with science learning	Citizen scientists in the classroom: developing capabilities through online opportunities	Developing science pedagogy to encourage critical and creative thinking	How to improve science teaching at your school	Exploring the language of science	Teaching science through nature
10:45	Morning Tea					
11:15	Chris Duggan	Maree O'Boyle	Ange Fox	Dr Victoria Metcalf, Sarah Morgan and Barbara Anderson	Dr. Steven Sexton	Lucy Waller
	House of Science	UC Education Plus	South Westland Area School	Participatory Science Platform	College of Education, University of Otago	West Coast Penguin Trust
	Hands on Science – an inspired pathway to developing integrated studies in the classroom	Building Teacher Confidence & Capability with the Nature of Science- Science Capabilities	The Scientific Method	Value Add: the benefits of co-design and curriculum integration in a collaborative STEM teaching model	Curriculum and Practice	The penguin. A perfect advocate for science and conservation education.
12:25	Show and Tell/PopUps/					
12:45	Lunch					
2:00	Sabina Cleary	Maree O'Boyle	Ange Fox	Jenn Corbett	Dr. Steven Sexton	Benjamin Moorhouse
	Kaha Education	UC Education Plus	South Westland Area School	Science Teaching Leadership Programme	College of Education, University of Otago	Department of Conservation
	Weaving everyday experiences with science learning	Building Teacher Confidence & Capability with the Nature of Science- Science Capabilities	The Scientific Method	How to improve science teaching at your school	Curriculum and Practice	Teaching science through nature
3:15	Chris Duggan	Brigitte Glasson	Andrea Soanes	Dr Victoria Metcalf, Sarah Morgan and Barbara Anderson	Sandy Robbins and Cathie Johnson	Lucy Waller
	House of Science	Victoria University	The Science Learning Hub,	Participatory Science Platform	NZCER	West Coast Penguin Trust
	Hands on Science – an inspired pathway to developing integrated studies in the classroom	Citizen scientists in the classroom: developing capabilities through online opportunities	Developing science pedagogy to encourage critical and creative thinking	Value Add: the benefits of co-design and curriculum integration in a collaborative STEM teaching model	Exploring the language of science	The penguin. A perfect advocate for science and conservation education.
4:30	Round Up/ Farwell					

Sabina Cleary

Weaving everyday experiences with science learning

During this workshop we will explore ideas about making science accessible, meaningful, and relevant for diverse students (and teachers) by connecting their home and community cultures to science. We will look at how we can leverage knowledge associated with everyday experiences to support science learning.

You will have hands on experience of learning activities that weave what the student brings together with the nature of science/science capabilities and the 'big ideas' of science; and then you will have the opportunity to work collaboratively to develop an activity of your own.

Sabina is an experienced science facilitator who has worked nationally and internationally with primary and secondary science teachers.

Chris Duggan

Hands on Science –an inspired pathway to developing integrated studies in the classroom

Having kids use hands on science activities where they can learn through trial and error inspires curiosity and creativity; it encourages critical thinking, collaboration and problem solving. It also poses questions that students want to know more about and thus presents opportunities to integrate a wide range of different subjects. This session will use hands on science activities as starters to follow the natural progression through to other curriculum areas such as maths, literacy, art, and social sciences.

Chris Duggan: Founder and CEO of the House of Science, a not-for-profit set up in 2014 to empower primary teachers with hands-on science resources which are used in over 250 schools in 11 regions. Chris has a background in secondary science teaching (Biology and Chemistry) and is passionate about making science accessible for all.

Jenn Corbitt

How to improve science teaching at your school

This workshop explores the Science Teaching Leadership Programme and how it has improved students' science engagement and achievement in schools. Participant teachers will share their stories of success.

Jenn Corbitt is one of the coordinators of the Science Teaching Leadership Programme. She has a wide range of experience in education from the classroom to policy development.

Chris Duggan

Hands on Science –an inspired pathway to developing integrated studies in the classroom

Having kids use hands on science activities where they can learn through trial and error inspires curiosity and creativity; it encourages critical thinking, collaboration and problem solving. It also poses questions that students want to know more about and thus presents opportunities to integrate a wide range of different subjects. This session will use hands on science activities as starters to follow the natural progression through to other curriculum areas such as maths, literacy, art, and social sciences.

Chris Duggan: Founder and CEO of the House of Science, a not-for-profit set up in 2014 to empower primary teachers with hands-on science resources which are used in over 250 schools in 11 regions. Chris has a background in secondary science teaching (Biology and Chemistry) and is passionate about making science accessible for all.

Ange Fox

The Scientific Method

Breaking down the scientific method so that teachers and students can gain an appreciation for what Science is, how it works, and how they can participate in the scientific process. This should help provide students with the skills they need to fully engage in and understand both practical and theoretical Science investigations at later levels.

The parts of the scientific method we will cover and share teaching ideas and resources on are:

- 1) Hypotheses / Purpose of investigations*
- 2) Following a method*
- 3) Writing a method*
- 3) Observation skills*
- 4) Recording data*
- 5) Analysing results*
- 6) Forming a conclusion*
- 7) Explaining results*

Kia ora koutou, I'm Ange, the Science teacher at South Westland Area School. I've been teaching Science to years 7 - 13 for the past 6 years. I'm keen on sharing and developing ideas on how to make Science more engaging and accessible to teachers and learners of all ages.

Brigitte Glasson

Citizen scientists in the classroom: developing capabilities through online opportunities

Online Citizen Science is a type of participatory science where interested people use the internet in some way to contribute to a science investigation. It can be a wonderful way for primary students to assist scientists with a real science project and at the same time develop their science capabilities and understanding of what science is like. In this workshop you will hear insights from teachers involved in our study who used Online Citizen Science projects such as Planet Hunters and The Plastic Tide with their primary classes. We will introduce you to a resource on the Science Learning Hub about using Online Citizen Science. You will have time to explore and use the resource, look for an online citizen science project(s) relevant to your programme, and consider some ways to use it productively for science learning with your primary students. You will need to bring your own device with internet capability. This workshop aims to share the stories and learning from a TLRI research project. After briefly defining what Online Citizen Science is, we will look at the teacher case studies and their stories. Following that you will explore your choice of projects online in a hands-on way through one of our project outputs, the online teacher support material.

Brigitte Glasson is a science education consultant. From a secondary teaching background, Brigitte has held a variety of roles in science education. She has been a lecturer in science education and professional studies, School of Primary Teacher Education, Christchurch College of Education. More recently she has taught in the Primary sector valuing this opportunity to understand first-hand the reality of primary teaching and at the same time integrate science through her work. As a consultant, much of Brigitte's work involves designing and leading professional learning and development that includes a strong focus on the Science Capabilities for Citizenship for teachers of Years 1 - 10.

Victoria Metcalf, Sarah Morgan and Barbara Anderson

Value Add: the benefits of co-design and curriculum integration in a collaborative STEM teaching model

Running collaborative inquiry projects with researchers, business and industry from your community can have fantastic benefits for you and your students: role-modelling, topic expertise, career pathway awareness and the potential for resourcing support.

Proposing collaborative teaching with community, research, business or industry partners requires an ability to recognise value-add on both sides of the equation. You know what you stand to gain from having a local biologist work directly with your students, but what are they gaining from the project? Being able to articulate this tangible benefit will allow you to pitch project ideas within your community with greater success.

In this workshop we'll work with small groups to co-design an inquiry project focusing on a STEM problem or opportunity in your community, identify local academics or industry professionals who can assist you in an external expert role, and brainstorm value-add on both sides to better pitch and run the project when you go back to your classroom.

In addition, these kind of projects offer ways in which to integrate material across the curriculum. We'll explore how to achieve this, giving you the confidence to explore this within your school.

This workshop is underpinned by knowledge and experience gained through 4 years of project trials in south Auckland, Taranaki and Otago via the Participatory Science Platform initiative under Curious Minds.

Dr. Victoria Metcalf is a marine biologist and science communicator committed to making a difference. She has made many trips to the Antarctic, researching environmental change impacts on Antarctic fish and shellfish. Her role in the Office of the Prime Minister's Chief Science Advisor as National Coordinator of the Participatory Science Platform, whereby communities, educators and scientists receive funding to work together on locally meaningful projects, is rewarding and matches her passion for engaging the public with science. She has also been a steadfast advocate for diversity in STEM. She balances all of this with being a single mother to a busy, curious daughter, especially exploration of the world around them together on bike and foot, and in the water. You can find her on Twitter at @VicMetcalf_NZ

Sarah Morgan runs the Participatory Science Platform for south Auckland, known locally as SouthSci, as part of the government's Curious Minds initiatives to engage New Zealanders with science and technology. COMET is an Auckland Council CCO and charitable trust which advocates for fairer, better education, skills and lifelong learning for Aucklanders. In her four years with COMET, Sarah has helped to establish 35 SouthSci projects across south Auckland involving more than 30 schools and reaching more than 800 young people from early childhood up. Sarah also helps schools across Auckland to design curriculum changes, to connect with STEM industry experts, and to consult around project-based learning programmes. Her approach focuses on authentic, personal relationships and direct local action. Her somewhat eclectic background helps her to relate with both scientists and educators. Knowing the NZ Curriculum, and at what stage young people learn different topics, makes it easier for Sarah to talk about science at an understandable level. Sarah grew up in Ōhope, Taupō and Havelock North. She lived in Dunedin for nine years before moving to Auckland for a Research Fellowship in 2014. Sarah has a Bachelor of Science with Honours, and a PhD in Molecular Genetics (Otago), with a strong background in science communication. In 2017 Sarah completed her GradDipT (primary) from the University of Waikato. In 2018 she is working one day a week as a STEM project-based learning coach for Ormiston Junior College in Flat Bush.

Barbara Anderson is passionate about getting everyone involved in science and technology. She is particularly enthusiastic about moths and their important, yet underappreciated, role in the ecosystem. Barbara is a quantitative ecologist based in Dunedin who leads the Ahi Pepe Moth Net project. Ahi Pepe Moth Net is a citizen science project that initially arose from a Participatory Science Platform project, and then has had Unlocking Curious Minds and Biological Heritage funding. The project aims to engage the public and raise the appreciation of moths, alongside exploring their potential to act as indicators of ecosystem health. Ahi Pepe Moth Net has a strong Te Reo Māori focus, as Barbara noted that there are few science resources written in Māori. She has worked closely with Te Kura Kaupapa Māori o Ōtepoti and Ngāi Tahu to ensure that the moth identification guides for Ahi Pepe Moth Net are also available in Te Reo, and are not a literal translation of the English but come from a Māori worldview.

Benjamin Moorhouse

Teaching science through nature

Nature provides an authentic context for learning and provides schools with the context to connect with their local community in a meaningful way. By providing opportunities to connect with nature, develop conservation knowledge, values and skills, teachers and students become empowered to take-action for their environment. This workshop aims to build an understanding of why a conservation education journey is worthwhile and how it fits with the New Zealand Curriculum. An interactive session will explore the tools and resources available from the Department of Conservation to support you on a conservation education journey. This will include examples of DOC curriculum linked resources, based on our integrated inquiry learning cycle that supports incorporating conservation education into your school curriculum and help build teachers and students capability to drive change in their community by taking-action for their environment.

The Department of Conservation outreach and education team is made up of education specialist based across the country. Benjamin Moorhouse based in Wellington, Maria Deutsch in Nelson and Annabelle Studholme in Christchurch will be running the sessions for DOC across the country.

Maree O'Boyle

Building Teacher Confidence & Capability with the Nature of Science-Science Capabilities

Teaching your students through the Nature of Science-Science Capabilities explicitly, turns Science around for both teachers and students. The Science Capabilities shared through hands-on activities create curiosity and thinking for all students. This will develop students' learning, skills, processes and knowledge across the curriculum and transfer into their wider world.

This PLD workshop provides an opportunity:

- *For classroom teachers to build confidence and capability to understand how the Nature of Science- Science Capabilities are embedded in classroom practice.*
- *To inspire teachers to build the Science Capabilities of students by participating in hands-on science*
- *To inspire teachers to build the Science Capabilities of students by participating in hands-on science*
- *To engage and encourage careful observation, science vocabulary and questioning.*

This is your chance to have fun by engaging and inspiring your learners with awe and wonder through Science.

Maree O'Boyle has been a primary teacher for 13 years. In this time she has taught science from New Entrants to Year 8 students. She has completed a Royal Society Primary Science Teachers Fellowship and is a member of the Canterbury Science Teachers Association and New Zealand Association of Primary Science Educators.

Maree is currently employed at the University of Canterbury Education Plus as an Accredited Facilitator for Primary Science working with individual school/kura or Kāhui Ako through tailored PLD. Working alongside school leaders, teachers and students, her focus is on raising student achievement, building teacher confidence and skills and developing the profile of science across the school. Maree is passionate about making a difference within teaching and learning through Science that excites!

Sandy Robbins and Cathie Johnson

Exploring the language of science

When learning is integrated there is a risk that the specific practices of different subjects will not be as evident as we would like them to be. In this workshop the NZCER science team will work with teachers to explore how describing and explaining in science are both similar and different to describing and explaining in other curriculum areas. We will draw on our recent work in developing different assessment tools: Junior StwE; ARB resources; and national monitoring (NMSSA) in science. Come along and explore how students responded to selected questions that illustrate the science practices we were looking for—and that many students seemed to be unaware of. You will leave with some tips for explicit teaching of how to describe and explain 'like a scientist'.

Sandy Robbins is a researcher and resource developer, and has also held a position at NZCER as a Support and Data analyst. Her areas of interest are in Science education and resource design. Before NZCER Sandy was a Secondary school science teacher and health promotion coordinator.

Cathie Johnson is an ex-principal with a breadth of knowledge of NZCER's assessment tools. She is available to support schools with their choice and use of any NZCER's assessments or surveys, and with assessment advice more broadly. She can also help you with analysis of achievement information and next steps. Cathie runs personalised professional development sessions based on the specific needs of a school or cluster.

Steven Sexton

Curriculum and Practice

Science is a way of investigating, understanding, and explaining our natural, physical world and the wider universe. It involves generating and testing ideas, gathering evidence – including by making observations, carrying out investigations and modelling, and communicating and debating with others – in order to develop scientific knowledge, understanding, and explanations” (Ministry of Education, 2007, p. 28). This workshop/presentation will unpack this curriculum statement through classroom practice using activities designed to support both teachers and students learning how to discover, share, and explore their world through science.

Dr Steven Sexton is a primary teacher who now is currently the Primary Programmes Coordinator at the College of Education, University of Otago. He delivers in the areas of Science Education, Teaching in the New Zealand Context, Science for Teachers, and Professional Practice. He has been the editor of the 'Science Education International' journal since 2017.

Andrea Soanes

Developing science pedagogy to encourage critical and creative thinking

The goal of science education is to enable students to participate as critical, informed and curious citizens. The Science Learning Hub offers NZ-based quality resources and effective pedagogy to deepen understanding and encourage scientific literacy. This hands-on workshop will explore science and education, how to develop science concepts and capabilities, and encourage critical and creative thinking.

Andrea Soanes is an experienced science teacher, and Kudos award winner 2018 for science education. She is passionate about contextual integrated teaching and learning. Andrea is the project manager for the Science Learning Hub, and alongside a dedicated team, work to support teachers to engage, inspire and build students curiosity about the world around them.

Lucy Waller

The penguin. A perfect advocate for science and conservation education.

Learn how the West Coast Penguin's education resource can be adapted to any classroom, most subjects and all ages.

West Coast Penguin Trust Education Ranger, Lucy Waller, makes the case for penguins, loving them, conserving them and presenting them to children as a gateway to more 'conservation conversations'. Lucy explains that kids, in fact most humans, love penguins – penguins are the perfect advocate to present an environmental/conservation message to all ages. From one child, to a class of children, a school and from there, to parents and their community, whole community shifts can happen and with that, genuine environmental change. The local connection to nature makes conservation real and therefore actions to make a difference become more manageable. Over the past couple of years, Lucy has worked with local Schools and education groups, as they have followed the Trust's education resource, learned about local penguins and started taking actions to help them.

Connecting you....

Department of Conservation	https://www.doc.govt.nz/
House of Science	https://houseofscience.nz/
Kaha Education	https://www.kahaeducation.co.nz/
New Zealand Council of Education Research (NZCER)	https://www.nzcer.org.nz/
Participatory Science Platform	https://www.curiousminds.nz/funding/participatory-science-platform/
Royal Society Te Apārangi	https://royalsociety.org.nz/
Science Learning Hub	https://www.sciencelearn.org.nz/
Science Teaching Leadership Programme	https://royalsociety.org.nz/what-we-do/funds-and-opportunities/science-teaching-leadership-programme/
South Westland Area School	http://www.southwestlandarea.school.nz/
TRCC	https://trcc.org.nz/
UC Education Plus	https://www.canterbury.ac.nz/edplus/
University of Otago	https://www.otago.ac.nz/
Victoria university	https://www.victoria.ac.nz/
West Coast Penguin Trust	http://www.bluepenguin.org.nz/

Front Cover Photo: 2018 Prime Minister's Science Teacher prize winner.

<https://www.pmscienceprizes.org.nz/previous-winners/2018-prime-ministers-science-teacher-winner/>