



Teachers' Refresher Course Committee
Kōmiti Whakahaora Kaiwhakaako



Primary Science Hui Wellington Programme 8 July, 2019





- Monday 8 July
- Coffee from 8:15
- 9am start
- 5pm finish
- Scot's College
1 Monorgan Rd
Strathmore Park
Wellington 6022

8:15	Coffee from 8:15					
9:00	Welcome/Introductions					
9:30	Anne Ryan	Dianne Christenson	Gill Stewart	Dr Victoria Metcalf with Sarah Morgan and Andy Crowe	Andrea Soanes	Sandy Robbins and Cathie Johnson
	House of Science	Koraunui School	Enviroschools te Upoko o te Ika a Māui	Participatory Science Platform	Science Learning Hub	New Zealand Council of Educational Research
	Hands on Science – an inspired pathway to developing integrated studies in the classroom	Improving Literacy through Science Teaching	Connecting students to their places - Citizen Science opportunities and resources.	Value Add: the benefits of co-design and curriculum integration in a collaborative STEM teaching model	Developing science pedagogy to encourage critical and creative thinking	Exploring the language of science
10:45	Morning Tea					
11:15	Steven Sexton	Carol Brieseman	Dr. Dayle Anderson	Ben Laybourn	Jenn Corbitt	Steve Hathaway
	University of Otago College of Education	Hampton Hill School	Victoria University of Wellington	Evaluation Associates Ltd	Science Teaching Leadership Programme	Young Ocean Explorers
	Curriculum and Practice	Integrating Science with Literacy and Maths	Citizen scientists in the classroom: developing capabilities through online opportunities	Science in a world of learning; Practical hands on exploration of Nature of Science	How to improve science teaching at your school	Love our Ocean
12:30	Show and Tell/PopUps					
12:45	Lunch					
2:00	Steven Sexton	Dianne Christenson	Gill Stewart	Dr Victoria Metcalf with Dr Sarah Morgan and Andy Crowe	Andrea Soanes	Sandy Robbins and Cathie Johnson
	University of Otago College of Education	Koraunui School	Enviroschools te Upoko o te Ika a Māui	Participatory Science Platform	Science Learning Hub	New Zealand Council of Educational Research
	Curriculum and Practice	Improving Literacy through Science Teaching	Connecting students to their places - Citizen Science opportunities and resources.	Value Add: the benefits of co-design and curriculum integration in a collaborative STEM teaching model	Developing science pedagogy to encourage critical and creative thinking	Exploring the language of science
3:15	Anne Ryan	Carol Brieseman	Dr. Dayle Anderson	Ben Laybourn	Jenn Corbitt	Steve Hathaway
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	Hands on Science – an inspired pathway to developing integrated studies in the classroom	Integrating Science with Literacy and Maths	Citizen scientists in the classroom: developing capabilities through online opportunities	Science in a world of learning; Practical hands on exploration of Nature of Science	How to improve science teaching at your school	Love our Ocean
4:30	Round Up/ Farwell					

Dayle Anderson

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.

Dr Dayle Anderson is a senior lecturer in teacher education at Victoria University of Wellington. She is an experienced researcher in the field of primary science education with a number of international publications. Dayle worked for eight years as a scientist, but moved into primary teaching after becoming involved in her children's education. She worked as a deputy principal in a primary school before becoming involved in initial teacher education. Dayle's research projects include a collaboration with the School of Information Science at Victoria, funded by the Teaching and Learning Research Initiative investigating the use of online citizen science projects in primary classrooms. A second project funded by the Victoria University of Wellington Research Fund is developing a model for the integration of science and literacy to support English second language learners.

Carol Brieseman

Integrating Science with Literacy and Maths

Let's get hands on and look at ways you can use Science activities in the classroom, integrating them with Literacy and Maths. Find out ways to engage the reluctant writer as well as boost your own confidence in teaching Science.

You'll come away with ideas how to build on students' curiosity as well as practical ways to develop Science Capabilities while covering the Literacy and Maths progressions.

Time to reignite (or ignite!) your passion for Science!

Carol Brieseman has been teaching for over 25 years. At present she is a Primary Teacher at Hampton Hill School, Tawa Wellington. In 2012 Carol won a Primary Teacher Science Fellowship and spent six amazing months at NIWA. While there, she worked alongside scientists and developed resources to use back in the classroom.

Carol is the lead teacher in Science at Hampton Hill School. She is also on both the Regional and National Primary Science Committees helping organise National Primary Science Week. Carol was also awarded a Primary Science Teachers Fellowship Alumni Award in 2014 in recognition of her work in enhancing science education both locally at Hampton Hill School and on a national basis.

For Carol, Science is a subject that she just can't help being passionate about. That passion is something that can be contagious with the kids (and colleagues) she works with. Carol was awarded the 2018 Prime Ministers Science Teacher prize.

Dianne Christenson

Improving Literacy through Science Teaching

Participants will participate in a Lesson Study style lesson where the focus is on developing oral language, team work and scientific understanding.

Dianne Christenson has recently returned from participating in a Fulbright Distinguished Awards in Teaching programme at Syracuse University in New York. While there she investigated methods to promote writing through science teaching. Dianne was awarded the 2017 Prime Ministers Science Teacher prize.

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.

Steve Hathaway

Young Ocean Explorers

Steve Hathaway will deliver an exciting and interactive professional development workshop for teachers. Teachers come away with the ability to confidently use the Young Ocean Explorers resource within their classroom. This will include viewing content and how it ties in with the curriculum, how to log in and use the existing assignments, creating their own assignments for their class and how to log their class into the website and navigate the assignments you have created for them. Teachers will come away from the session with an assignment created for their class ready to go!

Steve Hathaway, underwater cameraman and creator of Young Ocean Explorers, and his daughter Riley Hathaway, will introduce you to the underwater world of New Zealand. Steve's compelling footage and stories are all centred around the Young Ocean Explorers website from which you can confidently teach ecology, the environment, the living world, habitats and endangered species. Steve started filming professionally in 2008, his footage has appeared on BBC, Discovery TV, National Geographic and TVNZ, in numerous award-winning documentaries such as Blue Planet 2 and Blackfish. Together, with Riley presenting, the Young Ocean Explorers website is captivating young people throughout New Zealand.

The Young Ocean Explorers website is a free resource designed for teachers to use to teach students about marine life and how to care for the ocean. The resource has 9 curriculum links across 5 subjects and provides teachers access to short videos, quizzes polls and assignments on marine animals, endangered species, the living world, ecology, sustainability and the environment. There is also ability for teachers to create their own assignments for their own classes.

Ben Laybourn

Science in a world of learning; Practical hands on exploration of Nature of Science

This workshop is designed to unpack the nature of science through a series of practical hands-on activities. These activities are designed to engage teachers in exploring the nature of science as an overarching strand of the science curriculum.

The theory of action that is foundational to improving science in NZ is: we need students to become better scientists by being scientists, not just knowing science knowledge, but thinking and acting like scientists in the learning they experience. This encompasses fostering curiosity, wonder and creativity and also building the ability to be focused on observation, investigation and logical thinking.

This workshop will unpack this thinking and help teachers understand and design learning opportunities to meet student' needs in science and across the curriculum.

Ben Laybourn facilitates science professional learning in schools. He believes that science is best learnt from doing and getting out there.

Victoria Metcalf, Sarah Morgan and Andy Crowe

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.

Andy Crowe is former founder of social enterprise Critical Design Ltd, which aimed to make manufacturing accessible to everyone. The design studio Andy has created is located inside decile 1 Wesley Intermediate School and has brought technology such as 3D design and printing, robotics and CNC (computer controlled) milling to the school's students and community. Andy connected with the Participatory Science Platform through running the Hangatanga Parahatiki project with students, which recycled waste plastic into furniture and other useful objects. Andy has also supported innovative initiatives in the education sector and continues to help teachers to think outside of the box to best prepare students for an unknown future. He has harnessed his experience to drive the Mustard Seed curriculum to provide timely and purposeful content for local entrepreneurs.

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.

Anne Ryan

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.

Dr Anne Ryan is Director of Hutt Science, a branch of the House of Science NZ that supports science and technology education. She has a background in secondary science teaching, and was Head of Science at Manawatu College in Foxton and St Peter's College in Palmerston North. She has also taught overseas at Cowes High School on the Isle of Wight and on returning to NZ, spent 4 years at Massey University as a tutor in the School of Psychology while undertaking doctoral studies. Anne also has experience teaching in primary schools and qualifications in Maori Studies and Bilingual Teaching

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.

Gill Stewart

Connecting students to their places - Citizen Science opportunities and resources.

Using measuring and monitoring tools to connect our students to places in authentic ways that develop a connection to the natural environment whether it be ngahere (bush), awa (waterways), moana (lakes / ocean), rākau (trees), papa tākaro (playgrounds). You will be introduced to teacher tools, resources and monitoring methods which can be used with students. It will include marine metre squared, water quality monitoring, tracking animals, simple bird counts and a bioblitz methodology.

Gill is an experienced EnviroSchools facilitator who loves connecting students into the natural environment. Her background is teaching and science.

Links to.....

Department of Conservation	https://www.doc.govt.nz/
Enviro Schools	http://www.enviroschools.org.nz/
Evaluation Associates Ltd	http://www.evaluate.co.nz/
Hampton Hill School	https://hamptonhill.school.nz/
House of Science	https://houseofscience.nz/
Koraunui School	https://koraunui.school.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/
TRCC	https://trcc.org.nz/
University of Otago	https://www.otago.ac.nz/
Victoria University	https://www.victoria.ac.nz/
Young Ocean Explorers	https://www.youngoceanexplorers.com/

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

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