



Primary Science Hui Hamilton Programme 10 July, 2019





- 10 July
- Coffee from 8:15
- 9am start
- 5pm finish
- Waikato Diocesan School for Girls
660 River Road
Chartwell
Hamilton 3210

8:15	Coffee from 8:15					
9:00	Welcome/Introductions					
9:30	Dr Anne Baker	Ian Milne	Madeleine Collins	Andrea Soanes	Jenn Corbitt	Sandy Robbins and Cathie Johnson
	University of Waikato	Primary Science education consultant	Sir Paul Callaghan Science Academy	Science Learning Hub	Science Teaching Leadership Programme	New Zealand Council of Educational Research
	Am I getting better at Science? Ideas for assessment	“Well you know Mr Milne, there is no Planet B”	Using Science as a Vehicle for Core Curriculum	Developing science pedagogy to encourage critical and creative thinking	How to improve science teaching at your school	Exploring the language of science
10:45	Morning Tea					
11:15	Sandy Jackson	Chris Duggan and Catherine Frericks	Benjamin Moorhouse	Greta Dromgool	Sarah Morgan and Gustavo Olivares	Steve Hathaway
	Kings School	House of Science	Department of Conservation	Science Learning Hub	Participatory Science Platform	Young Ocean Explorers
	Hook, Line and Thinker	<i>Hands on Science –an inspired pathway to developing integrated studies in the classroom</i>	Teaching science through nature	Science Experiences - connecting and creating	Value Add: the benefits of co-design and curriculum integration in a collaborative STEM teaching model	Love our Ocean
12:25	Show and Tell/PopUps/					
12:45	Lunch					
2:00	Sandy Jackson	Ian Milne	Madeleine Collins	Andrea Soanes	Sarah Morgan and Gustavo Olivares	Sandy Robbins and Cathie Johnson
	Kings School	Primary Science education consultant	Sir Paul Callaghan Science Academy	Science Learning Hub	Office of the Prime Minister's Chief Science Advisor	New Zealand Council of Educational Research
	Hook, Line and Thinker	“Well you know Mr Milne, there is no Planet B”	Using Science as a Vehicle for Core Curriculum	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
3:15	Dr Anne Baker	Chris Duggan and Catherine Frericks	Benjamin Moorhouse	Greta Dromgool	Jenn Corbitt	Steve Hathaway
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4:30	Round Up/ Farwell					

Anne Barker

Am I getting better at Science? Ideas for assessment

Participants will engage in fun and simple activities that enable an exploration of what progress and assessment for primary science in New Zealand could look like.

Anne is an accredited facilitator with the Institute of Professional Learning, Te Whai Toi Tangata at the University of Waikato. She works around the North Island providing science professional learning for primary teachers through either school funding or supporting schools to access Ministry funding for science PLD. Her teaching background includes teaching years 2 – 8 across the curriculum and includes leadership experience as an assistant principal. Currently she is working on her Masters of Education in the area of Science Education and has a passion for science education that is focused on developing science for citizenship.

Madeleine Collins

Using Science as a Vehicle for Core Curriculum

Experiencing an activity in a hands-on, exploratory way creates very high levels of engagement in students. The 'doing' of an experiment and the collection of your own data or evidence, as opposed to just reading or writing about it, or watching a you-tube video, helps students to gain a better understanding of the steps and outcomes, for example the processes of science and the connections to their world. This understanding combined with the high engagement is easily transferred, with meaning, to core curriculum areas helping students achieve further success.

This presentation will include a number of practical examples of teacher-friendly, hands-on, engaging experiences in science. These will be carried out in the session so it will be easy for teachers to use them in their classrooms. Clear links will be shown as to how to integrate them across the curriculum, especially to core areas. Links will also be made to how these examples fit into the real world of a scientist as well as the all-important connections to the student's world.

Madeleine taught for 16 years, teaching at all levels from year 1 to 13. Until recently Madeleine taught at Laingholm Primary School as the lead teacher of science and implemented a thorough and broad science programme in the school. Since 2015 she has been out of the classroom broadening her work in science and PCT professional development. Madeleine is deeply passionate about science and truly believes NZ is on to a winning formula with Nature of Science in our Curriculum. Her favourite moments are seeing students get excited about science and watching that lift their engagement across all curricula areas.

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.

Greta Dromgool

Science Experiences - connecting and creating

"Experiences are such an essential part of science learning. In this workshop we will explore how we can connect to students' personal experiences as well as creating engaging opportunities for science learning within our classes. Participants will get to engage in hands-on learning and practice strategies that support students to develop their own curiosity and science thinking."

Ko Waipounamu tōku whenua
Ko Aoraki tōku maunga
Ko Moana Nui a Kiwa tōku moana
Ko Ngāti Pakeha tōku iwi

Kia ora, my name is Greta Dromgool. I am a science teacher who has trained and taught at secondary level and have spent several years teaching at intermediate level. I was a participant in the Science Teaching Leadership Programme and have recently retrained in early childhood, with a focus on Mana Aotūroa/Exploration. I currently work for the Science Learning Hub as their PLD Facilitator.

Chris Duggan and Catherine Frericks

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.

Catherine Frericks is the House of Science Central Waikato General manager. Catherine has a background in Earth Science and loves being part of the growing Hamilton House of Science 'family'.

Steve Hathaway

Love our Oceans

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.

Sandy Jackson

Hook, Line and Thinker

A hands-on workshop to explore simple practical activities to engage students and get them thinking about Science.

This is a chance for you to experience some interesting and thought-provoking experiments that you may not have seen before, using simple and easy-to-find equipment. They are sure to make your students go 'Wow' as you all have fun doing Science.

Notes will be provided, describing how to carry out each activity, explaining the Science behind it and suggesting the equipment needed, as well as where it can be obtained.

These activities can be used for a single lesson or as part of a unit. They may also be used to encourage writing, develop observational skills and to start discussions. These activities, along with your own inherent teaching skills, can make Science a regular feature in your classroom."

Sandy Jackson is a specialist Science teaching at King's School in Auckland. While trained as a secondary biology teacher she has taught primary science for the last 19 years. Sandy is an active member of the Auckland Science Teachers Association, representing primary schools. She is also a founding member of the NZ Association of Primary Science Educators, and has run several activities for teachers during Primary Science Week. As coordinator of the Auckland City Science and Technology Fair, for more than 15 years, she has regular contact with many primary and secondary teachers in the Auckland city region.

Ian Milne

"Well you know Mr Milne, there is no Planet B"

Listen to your children: Help them share their stories because they want to make a difference. This talk shares an analysis of some of the significant learning and teaching developments that were experienced when the presenter accepted an invitation to provide in class support for the seamless integration of science, mathematics, literacy and technology into a blended learning schools generic inquiry programme. The year started with all classes exploring the theme "Learning to learn". The goal of "Learning to learn scientifically" was adopted to place an emphasis on teaching and learning through inquiry.

The teaching and learning experiences implemented have been used by the presenter to continue to review and shape his rationale for Creative Exploration, an interactive, organic and collaborative approach to inquiry learning in science. Creative Exploration highlights the significant role, aesthetics

experiences of the natural world and the resulting sense of wonder play on further inquiry. Rationales for; the changes to both the teacher and children's learning roles, core curriculum concepts, skills and attitudes including cultural perspectives are identified and discussed as exemplars of children learning scientifically in a blended learning environment are shared, modelled and explored.

Ian is a semi-retired primary science educator, primary teacher and more importantly a grandad. Ian has been involved with primary education for more than 50 years. Since 2010 Ian has continued to follow his passion for promoting and supporting science learning and teaching in primary school classrooms. He provides in school professional development based around in-class support, teacher modelling and working with science champions in Auckland primary schools. Currently he is providing in-class support and mentoring of the teaching of science in four schools.

Throughout his career Ian has strongly supported teacher's organisations and has actively supported the setting up and running of primary science and mathematics teachers support groups. He is a past President of the NZ Association of Science Educators (NZASE) 2002 -2006, the National Director of NZASE/TRRC primary science conferences 2003 to 2009. He has recently held the office of the chairperson of the ICASE standing committee for Pre secondary and Informal Science Education. He was a member of the editorial board of the ASE journal Primary Science from 2006 to 2013 and for the last five years has been an active member of the editorial board of the Journal Science Teacher Education. In 1998 Ian was made a life member of the Primary Mathematics Association and in 2011 was made a life member of Auckland Science Teachers Association. In 2008 he was awarded the inaugural NZASE Peter Spratt Medal for sustained contributions to New Zealand science education.

Sarah Morgan and Gustavo Olivares

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

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.

Sarah 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.

Gustavo grew up in Santiago (Chile) knowing that the view of the Andes on a winter morning is one of the most beautiful sights to see. But in reality the air pollution was so bad that the mountains weren't visible for most of the season. This made air pollution a personal issue for Gustavo. Gustavo started his journey into science by nearly burning his room at least twice, thanks to flammable wooden floors, and blowing his house circuits a few times when trying to build a laser out of a strobe light and some gallium (his tip: don't!). When someone told him that the atmosphere is just a giant reactor and that we don't quite know all the details of yet, Gustavo decided that chemical engineering was the way to go.

Over the years Gustavo has worked in Chile, Sweden and New Zealand. His work has involved simulating the fate of emissions from copper smelters, measuring tiny particles in the streets, estimating the size of the particles emitted by cars and wood stoves, and designing and developing instruments and measurement platforms to capture more information about our air and making them more accessible to everyone - even for people who are not researchers. Gustavo believes that by making his science more available to everyone, people much smarter than him can see links that he can't, and people much more powerful than he can act so that everyone can see their mountains all the time.

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.

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.

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.

Links to....

Department of Conservation	https://www.doc.govt.nz/
House of Science	https://houseofscience.nz/
Kings School	https://kings.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/
Sir Paul Callaghan Science Academy	https://www.scienceacademy.co.nz/
TRCC	https://trcc.org.nz/
University of Waikato	https://www.waikato.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/>