

Item	Workshop Provider	Title	Presentation Summary	Target level/s
1	<p><u>Dr Adele Wilson:</u></p> <p>Dr Adele Wilson has developed, presented and managed numerous science programs for schools and public Science Week events with Questacon (The National Science and Technology Centre), CSIRO Education and the University of Tasmania, as well as overseas with the Edinburgh International Science Festival, Dr Bunhead's Science Education, and Generation Science.</p>	<p><i>Engaging students with science: STEM outreach programs at the University of Tasmania</i></p>	<p>Supporting science in the classroom is the main aim of the University of Tasmania's STEM Engagement and Outreach programs, hosted by the College of Sciences and Engineering. Our consistent, long-term approach is supported by committed stakeholders within the University and the wider community.</p> <p>Find out how our outreach programs can benefit your students – wherever you are in Tasmania. We have programs for all ages, K-12 and beyond. Our state-wide initiatives include the Young Tassie Scientists, Tasmanian Youth Science Forum, Festival of Bright Ideas and the Science and Engineering Investigation Awards, as well as nation-wide programs such as the Science and Engineering Challenge, ConocoPhillips Science Experience and National Science Week.</p>	All
2	<p><u>Amanda Hughes and Heather Prebble</u></p> <p>Amanda Hughes is a Science, Mathematics and STEM teacher at St Marys District School. She also coordinates the extension programs at the school. Amanda was fortunate enough to attend the 2018 StemX Academy.</p> <p>Heather Prebble is a Science, ICT and STEM teacher at St Marys District School. Having taught for more than 25 years, she has exceptional knowledge of pedagogies and understanding of how to increase engagement in the classroom.</p>	<p><i>StemX Academy – An overview</i></p>	<p>The StemX Academy is a professional development opportunity that occurs each January. Amanda attended the 2018 PL and will share her experiences and resources from this week in Canberra. The workshop will include the hands on task of proto-storming. This is where you create as many prototypes as possible from the material that is provided in a short amount of time. This creates a mindset of success, enhancing creativity and increases engagement. This carries on throughout the unit, with students engaging in future tasks without fear of failure.</p>	K-6 and 7-10
3	<p><u>Jason Dicker</u></p> <p>Jason Dicker has been a physics teacher at Launceston College for many years and is currently Chair of the Tasmanian Chapter of the Australian Institute of Physics. The institute has a mission to promote the development and application of the science of physics as well as to provide support to all physicists and physics educators.</p>	<p><i>Radiations</i></p>	<p>The Workshop is intended to look at all the different radiations that exist, together with their uses and biological effects. This will cover both ionising and non-ionising radiations and will include alpha, beta, gamma, X-ray and neutron radiation.</p>	All

<p>4</p>	<p><u>Fiona Taylor</u></p> <p>Fiona Taylor is a teacher of Science with 30 years' experience. Fiona has worked in range of school settings (State, Independent), in a range of states of Australia and has teaching experience to Senior Level Chemistry.</p>	<p><i>Raising Sun Safety Awareness using Science Experiments</i></p>	<p>This session provides specific science information that can then be tailored to suit the target year level. This session will look at the concepts of :</p> <ul style="list-style-type: none"> • Energy and UV radiation in Science contexts. • Energy transformation of UV radiation into light energy (different colours) • The type of radiation which causes skin cancer (related to wavelength and cell size) • UV radiation protection methods. • Experimental activities to measure UV using UV detecting beads. <p>Practical Applications: UV detecting beads glow different colours depending on the intensity of the UV rays they are exposed to. A range of investigations to test the effect of sunscreens and clothing as UV protection will be explored with hands on activities in this workshop. Participants will make UV detectors in the form of hat ties, bracelets or jewellery to help raise awareness of the radiation around us.</p>	<p>Primary</p> <p>Middle School</p>
<p>5</p>	<p><u>Louise Rogers & Kathleen O'Leary</u></p> <p>Louise Rogers & Kathleen O'Leary have been using Education Perfect resources at St. Michael's Collegiate School since early 2017. As Level 3 and Level 4 Certified Teachers on the program, they bring a wealth of experience and expertise to CONSTAT 2018 to share with fellow Science educators.</p>	<p><i>Successfully flipping the classroom with Education Perfect.</i></p>	<p>Education Perfect (EP) is an online learning resource with over 700 curriculum-aligned lessons, which can be used for formative assessment and consolidation in order to flip the classroom. Science teachers aim to teach a scientific view of the world to students and to promote in them creative-thinking and problem-solving skills. EP has the resources and data collection to allow you to free up class time to invest in inquiry-based learning. EP lessons cover skills, comprehension & interpretation tasks and are built on the mastery model and informed by Hattie's visible learning pedagogy, Marzano's dimensions of learning and Bloom's thinking skills framework.</p> <p>This session is an introduction to the EP platform and an opportunity to learn more about how you can implement the program into your curriculum.</p>	<p>Primary</p> <p>Secondary</p>
<p>6</p>	<p><u>John Bardenhagen</u></p> <p>John Bardenhagen is an upper primary school teacher of many years' experience who enjoys the challenge of engaging his students in STEM-based learning opportunities. Although the challenges can be demanding, the rewards are many. These rewards can be measured in</p>	<p><i>STEM Approaches within a Primary School Setting</i></p>	<p>Over the past three years, East Launceston Primary School has been investing much energy in making STEM education a reality in the Upper Primary years. More recently, STEM is being offered to our younger students in moving STEM towards a whole school focus. For us it is a multi-faceted approach that involves engaging students in authentic learning scenarios that can be presented both in the classroom and through making connections with outside STEM providers and organisations.</p> <p>Guided by the Tasmanian STEM Framework, the National STEM School Education Strategy (NSSSES), and Translating STEM Education Research into</p>	<p>Primary</p>

	<p>increased student participation levels, significantly improved student outcomes and the development of critical and creative thinking capabilities. STEM-based competitions and “STEM Partnerships” are two examples of strategies used by John to gain greater leverage in switching students on to STEM-based learning. John has been a STAT Council member for the past three years.</p>		<p>Practice, this workshop features practical examples of how the research and principles underpinning these documents can be used to implement approaches in the STEM classroom. This workshop will appeal to those of you who lead, or wish to lead, STEM within your school. It is for those of you who are keen to discover what STEM-based approaches and accompanying resources can be used to inspire your students.</p>	
7	<p><u>Dr Marj Colvill</u></p> <p>Dr Marj Colvill is a retired teacher with national recognition in science education. Marj has significant experience in the classroom and in pre-service education. As a school leader Marj is a provider of curriculum support in general education, literacy and science. She is a frequent presenter of science education keynote addresses nationally and of workshops at State, National and International events. Marj is a Life member of STAT and ASTA.</p>	<p><i>In-depth Science Inquiry in the Early Years of formal schooling – how to both enjoy and make the most of the teaching and learning experience.</i></p>	<p>Participants will be encouraged to explore ways to introduce science inquiry skills and opportunities for assessment in science education in keeping with the requirements of the Australian Curriculum, while making science education an exciting and worthwhile learning experience through research investigation.</p> <p>Participants can expect to participate in discussion, share ideas, and leave with more. This session will be of immediate use to classroom teachers and will offer opportunities to celebrate student success in a meaningful and constructive way while supporting teachers to enrich their science classroom program.</p> <p>Please bring your laptop (or facility to upload support materials from a USB) and the pages from the Australian Curriculum Science – relevant to your year group/s requirements.</p>	<p><i>Prep – to Yr 4; Pre-service teachers; relief teachers; primary school leaders/coordinators in Science Education.</i></p>
8	<p><u>Phillip Sansom</u></p> <p>Philip Sansom has worked as an exploration geologist and as a secondary maths/science teacher. Since “retiring” from teaching he has worked with the AusGeol 3D geological visualisation project and the Teacher Earth Science Education Programme developing project resources for the education sector.</p>		<p>The Virtual Library of Australia’s Geology is a collaborative national project to digitally capture and document Australia’s diverse geological heritage and to develop educational resources to accompany the visualisations. The library delivers free, downloadable visualisations of outcrops, fossils, minerals, rocks and virtual tours of larger geological features. Participants will be introduced to the project and will investigate for themselves the potential of this technology for use in the classroom.</p>	<p>All</p>
9	<p><u>Dr Donna Satterthwait</u></p> <p>Dr Satterthwait has been a teacher educator in secondary science for the last 13 years here in Tasmania and a previous 13 years in Queensland. She has presented talks and workshops on various aspects of</p>	<p><i>Introducing a planning framework for phenomenon-based learning</i></p>	<p>At the heart of science learning is the idea of experiences in the natural world. The recognition that some of these, especially shared experiences, are events or phenomena that can be surprising, arouse our curiosity and cause us to seek explanations. It is the science teacher’s responsibility to create these experiences for the students in his/her class. When his/her students observe these</p>	<p>Primary and Secondary teachers</p>

	science education, including authentic assessment. She also was a classroom teacher of senior biology and physics as well as lower secondary general science.		phenomena, these observations form the foundation for inquiry (the framing of the 'why' questions), critical thinking skills, science content and procedural knowledge. This workshop illustrates how a planning framework serves to enhance students' learning of science.	
10	<u>Kelly Spence</u> Kelly Spence is an experienced science educator having worked in Australia and internationally, in diverse educational settings. She has developed interactive science units of work suitable for primary and secondary students. Kelly has developed, delivered and published professional teaching resources, with a recent focus on the food and fibre industry. Kelly works as an Education Officer with the Primary Industries Education Foundation Australia	<i>Food and Fibre classroom ready resources in STEM</i>	Brief description of session for program (maximum 100 words): The Primary Industries Education Foundation Australia (PIEFA) has developed exciting new resources on Atlantic Salmon production. The resources are designed for students from grades 4-10, explicitly written for Australian curriculum outcomes in the learning areas of science, technology and geography, with a distinct STEM (science, technology, engineering and mathematics) flavour. The resources include online teacher guides, downloadable workbooks for students, assessment tools and are accompanied by twelve (12) innovative Virtual Reality 360 educational experiences that allow students to view every aspect of salmon production from egg to plate. Teachers will explore Primezone (www.primezone.edu.au) for other fantastic science resources.	All
11	<u>Doug Grubert</u> Doug is Gifted and Talented Coordinator at Launceston Church Grammar School and is also the newly appointed director of the Tasmanian Science Talent Search. In this role Doug will be coordinating entries from all schools and age groups for a host of challenges presented annually by the Science Teachers' Association of Tasmania.	<i>Tasmanian Science Talent Search as a means of engagement and extension in science.</i>	The Tasmanian Science Talent Search (TSTS) is an initiative of the Science Teachers Association of Tasmania (STAT). The TSTS promotes quality science education in government and non-government schools through the recognition of outstanding work in a variety of fields. The TSTS is open to all Tasmanian students from early childhood classes to year 12. Doug will provide entry details for delegate teachers and laboratory technicians and will show exemplars of work from high ranking students of yesteryears. He will also explore pathways from TSTS into national competitions, including the BHP Student Awards.	All teachers and laboratory technicians.
12	<u>Ian Pattie</u> Ian Pattie is an ageing gentleman who needs to be given a rest so that he may retire to his shed. Retirement plans seem to evade Ian, however, as he is kept busy in his role as	<i>TSTS Technology Challenge</i>	The most significant game changer in technology, apart from the wheel, is, arguably, moveable type. This workshop will present an integrated unit of work that will have students making and using moveable type and other forms of written communication before the invention of moveable type. This is a STEAM unit and is set up in such a way that teachers may use just the technology component or the integrated study which will cover multiple areas of the Australian Curriculum.	Primary Prep – Year 6 Middle school (7-8)

	<p>state Co-ordinator of the Tasmanian Science Talent Search Technology Event. He was once a primary school principal, science consultant, journalist and political adviser.</p> <p>Ian is a STAT Life Member.</p>		<p>Teachers will be able to take the ideas back to classrooms and support students to enter in the Tasmanian Science Talent Search Technology Challenge.</p>	
13	<p><u>Michael van der Ploeg</u></p> <p>Michael van der Ploeg has been associated with the RACI Crystal Growing Competition since 2007, with his students winning the state's Best Overall Alum Crystal for the last 5 years.</p> <p>In 2017 his students won the prestige National Primary School Crystal Growing competition as well as securing a second place and a highly commended.</p>	<p><i>Cool Crystals - Growing Alum Crystals for the RACI Crystal Growing Competition</i></p>	<p>Learn the art of growing an amazing Alum crystal for the annual RACI Crystal Growing Competition. The methods employed by Michael van der Ploeg's students have been refined since 2007, with the school recently securing a win and second place award at the national annual competition in 2017. Suited to all age groups this project involves patience, time and a fridge.</p>	<p>All teachers and laboratory technicians</p>
14	<p><u>Associate Professor Sharon Fraser</u></p> <p>Sharon Fraser is a lecturer in science education at UTAS School of Education. Starting as a scientist, and after working in related fields, Sharon taught secondary science, mathematics and ICT before proceeding into science and STEM educational research. Sharon's research spans science/mathematics curriculum and pedagogy in high-school and in higher education, in teacher education and in professional learning. Sharon's main focus is <i>capacity building</i>, which she has enacted through learning and teaching enhancement initiatives and STEM research. Sharon enjoys working with pre-service and in-service teachers who love science, are excited about engaging in STEM</p>	<p><i>Enabling Epistemic Insight: From thinking scientifically to contributing to solutions to Big Questions.</i></p>	<p>What insights do we expect young people to call on when they address the big questions of life? How can schools prepare them for a world that is awash with "fake news" and exaggerated headlines, equipping them with the best ideas and strategies we can offer - to help them make decisions rationally and compassionately? Research has found that the entrenched compartmentalisation of subjects in schools can have a significant influence on what students suppose about science – its nature, its strengths and limitations. Boundaries between science disciplines and between science and other subjects, can be particularly impermeable. This means that it may not occur to the teacher or the students that the question that the class is addressing in science, could also be explored in another subject. In this workshop, we will look at strategies that science teachers can use to enable students' reasoning on questions, which bridge subject compartments.</p>	<p>All</p>

	(or STEAM) and who appreciate the roles that these play in the creation of truly capable learners.			
15	<p><u>Dr Gurion Ang</u></p> <p>Gurion Ang finished his PhD studies in 2017 with the UQ School of Biological Sciences. The over-arching theme of his research is in insect-plant interactions: understanding the intricate relationships between pest insects and crop plants enable us to employ pest management strategies to reduce our reliance on pesticides. He examines these relationships with behavioural ecology and chemical ecology approaches. Gurion also teaches into several undergraduate and postgraduate courses, and his secondary research interest is in teaching and learning techniques that maximise student learning and performance.</p>	<p><i>Teaching Undergraduate Biology: Ideas for Your Classroom</i></p>	<p>BIOL1030: Global Challenges in Biology is a first-year undergraduate delivered at the University of Queensland, and approximately 600 students undertake this course as part of their Bachelor of Science degree. In this session, Gurion will showcase a selection of activities conducted as part of the course, including the skills developed during practical activities and how these culminate into a team-building field trip. Students also attend workshops throughout the semester, and engage in unconventional workshops including a mock parliamentary inquiry, and a mission to save the most vulnerable species of Australia. Gurion hopes that this showcase will give delegates ideas that each person can adapt for use in his/her own classroom.</p>	<p>Secondary Biology Teacher</p>
16	<p><u>Prof Deborah Corrigan</u></p> <p>Challenging accepted wisdom in science education is part of Professor Deborah Corrigan's research approach, which is driven by the urge to make students enthusiastic about learning science and more recently, STEM. Among her goals is that of 'engaging students' hearts and minds'. Deborah has taken on the challenge of the persistent decline in school-science popularity, despite public interest in science and STEM remaining high. Deb wonders why students can be so interested in science out of school, but not within. Deb believes that science teachers need to package their content very differently to suit 21st century students. 'We need</p>	<p><i>Science and it's relationship to STEM Education</i></p>	<p>Deborah provides a workshop that will explore, in some detail, <i>Science and its relationship/s to STEM</i>. Further to this she will tease out with her delegate group just exactly what STEM Education might look like, in practical terms, in the class-room. This workshop leads on from Deborah's Keynote Address, which drew from Deb's research experiences into the generation of enthusiasm for science learning and the potential role this could play in raising the popularity of school-science among Australian students.</p>	<p>All</p>

	critically creative thinkers to make science teaching better', she says.			
17	<p><u>Richard Holwill</u></p> <p>Richard Holwill is a teacher of Mathematics at Marist Regional College. In his down-time Richard is a figurative sculptor who crafts metals, in their various forms (wire, mesh, etc) into intricate pieces of sculpture. By coupling together the unique characteristics of metal (malleability, ductility, etc), a mathematical approach to dimension and a keen eye for symmetry, Richard has produced pieces of great beauty. A frequent exhibitor at shows, exhibitions and artistic festivals, Richard is the Burnie local who adds the “A” into STEAM!</p>	<p><i>Enmeshed in Wire</i></p>	<p>In this workshop delegates will get a hands-on feel for the art of turning flat, 2D wire and wire-mesh into creative 3D pieces. Delegates will create their own piece, of scientific significance, to take away.</p> <p>Richard will explain the process from conception of an idea, to creating the final piece. The works are predominantly figurative, exploring the myriad range of human activity across all aspects of life. Richard tries to bring a sense of dynamism and fluidity to his sculptures, juxtaposing the rigidity of the medium from which they were created. His sculptures, whilst structurally sound, are only a single layer thick, giving the works an ephemeral, transparent quality. Richard’s works are mounted mostly on Tasmanian timbers, but he also uses an eclectic mix of antique pieces of wood and furniture sourced from old factories, bric-a-brac shops and back-yard sheds. Richard’s sculptures have a certain industrial feel to them, very much in keeping with Burnie's heritage.</p>	<p>All creative types!</p>
18	<p><u>Mandy Jackson</u></p> <p>Mandy began as a laboratory technician at Wynyard HS in 1977. This, her 22nd year at Hellyer College, sees her support all science disciplines at pre-tertiary level. Mandy considers an important part of her role to be demonstrating and fostering a love of science. Mandy runs science experience sessions for students at the College who have been turned-off by science or who have gaps in their science learning. She provides advice & equipment to other schools to allow them to run science activities that were otherwise impossible. With a Diploma of Laboratory Technology, a Cert 4 in Training and Assessment, Mandy is now completing a Diploma in Workplace Health and Safety. Mandy is a life member of the Laboratory Technicians’ Association.</p>	<p><i>Creatures in the classroom</i></p>	<p>Learn how to hatch, rear and care for various insects and other organisms suitable for raising and observing in your classroom or prep room. Some include spiny leaf and stick insects, small mammals, tadpoles and frogs, seahorses, fish, freshwater and terrestrial snails, beetles and slaters, plus Euglena and other mysteries of the microscopic world.</p> <p>Learn about suitable enclosures, growth media, observation techniques, how to hatch, catch and wrangle, and ideas for using mentioned species in science investigations and experimental design activities that do not inflict harm. Delegate will see organisms’ camouflage and mating habits live on site.</p>	<p>All laboratory technicians and interested teachers at any level.</p>

19	<p><u>Darcy Vickers</u></p> <p>Darcy began with a primary teaching career before his passion for engaging students in outdoor learning let him to environmental education. He was given the opportunity to be involved in the development of the Forest Education Foundation (FEF). Since then the FEF has grown from a small centre to a leading education provider in the not-for-profit sector. The FEF has established programs supporting primary to senior secondary education, both school-based and by field experiences. The EFF is focused on: development of curriculum materials, direct teaching with students, support of professional learning for practising teachers and the conducting of workshops for education students.</p>	<p><i>Supporting teachers through educational resources and student learning experiences K-12</i></p>	<p>This workshop will provide the opportunity explore how the Forest Education Foundation can support teachers and students through curriculum-relevant resources, class visit and field trip programs. This will include examples of programs available to schools throughout the State along with the opportunity to see some of the activities and supporting resources. We will also review some of the new resources currently being developed to further support science education</p>	<p>All: K - 12</p>
20	<p><u>Andrew Hughes and Dr Claire Hawkins</u></p> <p>Andrew Hughes is the education manager with the Bookend Trust and has been developing adventure learning programs for 11 years.</p> <p>Dr Clare Hawkins is a zoologist with a special interest in threatened species. Clare has been coordinating citizen science with the Bookend Trust for the past 2 years, including organising the Extinction Matters BioBlitzes in Hobart, Latrobe and Kingston.</p>	<p><i>Where? Where? Wedgie!</i></p>	<p>Dr Clare Hawkins and Andrew Hughes will introduce participants to a new citizen science and education project. Where? Where? Wedgie! will give schools and the public the chance to participate in field surveys in May this year to help us understand the population dynamics of the threatened wedge-tailed eagle. Using an online learning platform students will gain skills in identification and bird of prey biology from recognised experts in the field.</p>	<p>All</p>

21	<u>Rosemary Anderson</u>	<i>TBC</i>	TBC	
22			Note: This Workshop Programme is a work in progress... Completed version will be released very soon. Ann and Perviz (Co-convenors: CONSTAT 2018)	
23				