



SESSION DETAILS & PRESENTER INFORMATION



About the presenter: Doug Bail is an experienced physics educator and writer with a particular interest in the development and integration of new technologies into science teaching. He has previously been a head of science and senior physics teacher, and maintains a passion for making physics relevant, stimulating and accessible to all students. Doug now runs his own company, developing and distributing products for science education throughout Australasia as well as occasionally filling in as a teacher of senior physics. He led the development of the practical activities that form part of "Pearson/Heinemann Physics" and the electronic practicals for "Pearson Science for the AC" and is the co-ordinating author for the new Australian Curriculum senior science Physics texts. He was also involved in the introduction of Agriculture as a subject for the International Baccalaureate (IB) and was chief examiner of the subject for some years.

Chemistry of Dataloggers 10.30-12.00 Thursday

This session will cover electrode calibration, particularly pH and spectrometers for colourimetry. Focus will be on using the equipment efficiently and effectively and will depend on participants background and requests. The session will also cover a range of things that typically prove useful as starters for EEI's whether junior or senior. All the content in this session will be applicable to both PASCO and non-PASCO users.

Physics of Dataloggers 1.00-3.00 Thursday

This session will cover some alternative experiments and methodology which generates deeper, more immersive data leading to greater student understanding. Will include activities for middle through to senior studies including: Thermodynamics, Motion, Video Analysis of motion, Electromagnetic induction, transformers, Sound and waves. Focus will depend on participants background and requests. All the content in this session will be applicable to both PASCO and non-PASCO users.

Environmental Monitoring using Dataloggers 9.00-2.00 Friday

On the spot experiments on Agriculture, Environment & Water Quality using dataloggers will be performed during an extended tour of the Mackay SHS school farm. All the content in this session will be applicable to both PASCO and non-PASCO users and will include some of the new cataloguing sensors that we can leave around the farm to collect data and analyse later as well as on the spot monitoring.

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Extended Farm Tour led by staff of the Ag Science Department 9.00-2.00 Friday

Mackay State High School has an intensive farm which has excellent facilities for students to use. The farm includes: Aquaponics facility – fish farming to grow plants, Beehives for honey production, Cattle – stud cattle, improved pastures, feed lot and multi-award winning cattle show team, Nursery and propagation facilities, Orchard - citrus, macadamia nuts and mixed tropical fruits, Poultry, Vegetable Cropping Area and Workshop area for machinery maintenance



About the presenter: Berwicks Office Technology has been providing Queensland with technology integration, user training and a service team that has been responsive and knowledgeable since 1930. Now they show that they are still on the cutting edge by partnering with MakerBot to

bring 3D printing and scanning that is easy, reliable and limitlessly creative to classrooms.

Meet the MakerBot Morning tea & Lunch Thursday & Friday (all delegates)

Everyone seems to be talking about 3D printers for the classroom, but which one? What will you do with it once you've got it? Aren't they just another cool toy that will crowd your work program? Meet the MakerBot – a 3D printer that has been designed with longevity, low maintenance and useability in mind. A MakerBot 3D printer gives you instant access to the Thingiverse online with THOUSANDS of free projects as well as an app that gives you the ability to 3D print almost anything your imagination can come up with. 3D printing will also open a whole new world to special needs students – especially the visually impaired.



About the presenter: Dissection Connection sources and supplies dissection specimens for schools and educational institutions. The organs are vacuum packed, frozen and delivered to your door. All you have to do is defrost them when you're ready to use them.

How to Get Away with Murder: Toad Euthanasia – Part 1 8.00-8.45 Friday

A practical workshop on the CO₂ euthanasia SOP. You'll be given the chance to practice the steps so you are confident that you are performing the procedure correctly. By the end of the day you will be able to make a fully informed decision on whether or not it is practical for your school to perform toad euthanasia. Part one will cover the ethics and reasoning behind the new SOP, the requirements for schools to meet before performing the procedure and the safe collection and euthanasia of toads using the CO₂ exposure protocol. This is a two part session to allow sufficient time for the toads to be exposed to the gas. If you don't want to touch a toad you don't have to.

How to Get Away with Murder: Toad Euthanasia – Part 2 2.00-3.00 Friday

Part two covers the tests to perform for signs of life following exposure, what to do if a toad fails the test, the anatomy and dissection of the toad. This session is split into two parts to allow the toads to have sufficient exposure to the gas.

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Female reproductive specimen dissection 1.30-3.00 Thursday

This workshop will focus on specimens suitable to use in teaching reproduction which, as you will be aware, is now a core unit of the Australian National Curriculum for Year 8 science. The workshop will include specimens of bovine ovary and uterus as well as an introduction to anatomical colouring-in resources as teaching tools. The session will be focused on giving teachers the knowledge and confidence to enrich their lessons on the reproductive system, giving lab technicians the tools to assist and support their teaching colleagues with incorporating specimens like these into their lesson plans and, in the long run, engaging students more by enriching their learning. Hands on session that will be run in groups of two.

Plucks vs Piglets specimen dissection 9.00-11.00 Friday

A pluck can be used to bring most of the body systems to life in the classroom and provides a glimpse into the complex inner world of the human body. While you are at it, Save a rat – dissect a piglet! Stillborn piglets are the ethical alternative to rat dissections and are entirely chemical free. We've noticed a trend towards plucks and piglets being used together in the classroom and this session will let you compare the adult sized pluck with the complete viscera in a juvenile animal. We'll be there to guide you and offer tips and hints on how to dissect an entire animal. This dissection workshop promises to deliver Everything But The Squeal. Hands on session that will be run in small groups rather than by demonstration.



About the presenters: Deb has worked in Queensland Schools since 1999. Tired of seeing teachers deliver fantastic lessons in Earth Science full of volcanoes and earthquakes and folding and landslides only to have to put a pebble 'specimen' she's put her mind to finding geology specimens that really rock. Jaimie is really good with a geology pick and hammer and in the past he's used geology and soil science to help him with his ecology projects with CSIRO and Queensland DPI.

Microfossils & Foraminifera 10.30-12.00 Thursday

Microfossils are hard to find, but foraminifera aren't. Usually less than 1mm in size we'll give you a sample of foraminiferous sand to examine through a microscope, tips on identifying what you find and some activities for the classroom that lets kids discover the hidden world of foraminifera. There will also be some 8000 year old microfossils available to study.

Rock Identification – let's get the rocks in the text book straight 11.30-1.00 Friday

With Earth Science back in the Australian National Curriculum it's time to dust off those old rock collections and make some sense of them. This session will focus on the basics of rock identification for Junior Science classes and to help you keep your cool when they are sent back to the prep room all mixed up (again!). Let's get the rocks in the text book straight.

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About the presenter: Ben Newsome Heads a strong team of talented science communicators & educators in Sydney, Melbourne, Brisbane, Canberra and recently Shenzhen in China, reaching roughly 250,000 students across Australia and around the world every year. Ben is also co-founder of Virtual Excursions

Australia, a non-profit entity that brings all Australian video conference educational content providers, booking systems, hardware and network vendors together for ease of school access, discussions on best practice and collaborative programs.

Teaching science virtually: lights, camera, action! 9.00-10.00, Thursday (all delegates)

This session will look into the myriad of science centres, aquariums, zoos and more that are delivering high quality science outreach to students from preschool to Year 12 using video conferencing technology. During the presentation you will learn how a variety of STEM providers have created interactive curriculum-aligned science classes for students regardless of their location, in many cases bringing their unique collections and teaching tools that would not be accessible without physically being at the museum. Known as virtual excursions, you'll find out how to easy it is to organise a connection and the benefits for the 21st century learner. Plus, you might get inspired to create your own lessons and could be soon teaching classes around the world!

Useful Websites

- http://www.churchilltrust.com.au/media/fellows/To_investigate_best_practice_in_science_education_B_Newsome_2013.pdf
- <http://www.fizzicseducation.com.au/school+visits/Virtual+excursions.html>
- International Society for Technology in Education Interactive Video Conferencing group
- <http://www.virtualexcursionsaustralia.com.au/>
- <http://www.dartconnections.org.au/>
- <https://www.education.electroboard.com.au/events/VideoConferenceEvents>
- <https://pecevents.wordpress.com/>

The science of waves: play with light & sound in novel ways to increase student understanding 10.30-12.00 Thursday

In this session we will explore a number of ways to spice up your next science lesson on sound waves. Using both simple supermarket materials through to a Rubens Tube, you can teach frequency & amplitude in ways that promote student understanding and engagement. Get ready to get hands on as there will be materials on hand in this session plus you'll find out how this all can be taught over video conference to learners worldwide!

Kitchen science: STEM lessons at a moment's notice 11.30-1.00 Friday

Got to deliver a science lesson with no preparation? No problem! Learn how to create a simple "go to box" that can support many, many lessons without breaking the bank. Perfect for casual teaching or just those times when you need to pull out a quick experiment to keep those students going! These experiments a short, sharp and simple to deliver and yet still promote science inquiry skills in students of all ages.

Under pressure: simple ways to teach air pressure in the junior science classroom 9.00-11.00 Friday

Find out how to demonstrate air pressure simply to students who are struggling with this concept. Students sometimes struggle with visualizing how Charles Laws and others are expressed in the real world; here are several experiments that will allow you to apply basic theory to how planes fly and how weather works.

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