



PROFESSIONAL DEVELOPMENT

Monday 19th and Tuesday 20th September 2016

"Science Wars Episode 1 - The Lab Troopers Strike Back"

These are professional development workshops for Science Education Technicians of NSW, which will be both interactive and participatory and will also include current topics relating to our occupation.

Workshops were selected as most requested from the results of the recent survey.

Number of participants may be limited. Book now to ensure your place.

Please complete the registration form and workshop selections below and forward by 12th September 2016

Monday Keynote Speaker: Prof Dr Mike Archer - Professor of Paleobiology in the School of Biological, Earth and Environmental Sciences at UNSW

Time: 8.30 am - 3.15 pm (Registration from 8.00 - 8.30 am)

Venue: Sydney Grammar School, College St, Darlinghurst, Sydney

Fees: ASET-NSW Members: 1 day \$100.00 - 2 days \$200.00

Non Members: 1 day \$145.00 - 2 days \$290.00

REGISTRATION AND/OR ENQUIRIES

Phone: **Margaret Croucher:** 0405 244 862

or

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2016asetconference@gmail.com

Workshop descriptions:

<p>A Touch of Glass</p> <p>Dale Carroll Geelong School</p>	<p>Being able to work with glass can be a useful skill to have in a science department. From cutting glass sheet into smaller pieces, to bending tubing for gas delivery tubes or repairing the broken measuring cylinder. Simple techniques to allow you to do all of the above will be demonstrated with time for you to have a go yourself. This is a hands-on session using only tools that are found in the science department, or cheaply purchased, and only uses a Bunsen burner for heating.</p> <p>THIS IS A DOUBLE SESSION</p>
<p>Agarose Gel Electrophoresis</p> <p>Steve Garrett – Bio-Tek Services Pty Ltd</p>	<p>In biotechnology, agarose gel electrophoresis is the cornerstone DNA separation technique. More recently, exciting innovations in the use of agarose gel electrophoresis are now enabling students to also engage with and explore both native and denatured protein separations using the same equipment previously used for DNA separation. This has significant implications for the classroom. This ‘nuts and bolts’ hands-on workshop explores the fundamental concepts and principles of agarose gel electrophoresis and its basic application in DNA and protein separation, as well as introducing more advanced applications. Participants will be exposed to a range of cost effective equipment, from home-made through to cutting edge and learn how to:</p> <ul style="list-style-type: none"> • Prepare, set up and manage classroom activities • Prepare and run dye, DNA, RNA and protein samples • Visualise, record and analyse results • Troubleshoot <p>The workshop is structured to allow continuous opportunities for discussion, to enable participants to explore the options that best address their needs. Participants will leave the session with the knowledge, practical skills and confidence to enable them to manage their students’ use of the technology in routine DNA and protein separations as well as for experimental investigations. Written resources are provided.</p> <p>THIS IS A DOUBLE SESSION</p>
<p>Be Compliant in WHS & GHS</p> <p>Karen Mellenbergh CEO Parramatta</p>	<p>The Work Health and Safety Act of 2011 has some significant changes from the old Occupational Work Health and Safety Act. Part of these changes was the implementation of a new system for labelling chemicals- The Global Harmonised System (GHS). Learn how the new WHS act affects your rights and responsibilities, what the GHS means for you, in your workplace and be the judge as we look at some real life breaches to the Act by some NSW Educational Institutions. This session will cover the importance of documentation including risk assessments. If you are on your WHS committee, this session is for you!</p>
<p>Brains Trust</p> <p>ASET Panel</p>	<p>This session will run with a Q & A format, where technicians will have the ability to ask a panel of experienced technicians –How To! Do you have a prac that just never seems to work? A prac you hate doing? Can’t seem to get on top of all you need to do? Having problems with your Science Teachers, Coordinator or Executive? Not sure if you’re meeting requirements? Not sure where or how to store your chemicals? Not sure if you’re disposing chemicals correctly? Got a problem you’d like some help with? Here is your chance... Come to this session armed with your questions and together, you will get some answers!</p>
<p>Cosmetic Chemistry</p> <p>Lois O’Meara Eltham College</p>	<p>This session covers the history of soap, cosmetics and aromatherapy as well as simple recipes for hand cream, bath bombs, soap, lip balm, body scrub, cold cream and toothpaste. Most ingredients are found at the supermarket and the emphasis is on natural products with no artificial perfumes, dyes or other petrochemicals which are vegetarian, allergy free and safe on sensitive skin.</p> <p>Suppliers, references and web addresses are included. The session can be used for Year 3 –Year 9 Science or simply as a health and wellbeing session or end of year activity</p> <p>THIS IS A DOUBLE SESSION</p>
<p>Could Data Save Humpty?</p> <p>Stuart Lewis Scientrific Pty Ltd</p>	<p>A new approach to the classic egg drop (“I’ve flown from one side of this galaxy to the other, and I’ve seen a lot of strange stuff, but I’ve never seen anything to make me believe there’s one all-powerful Force controlling everything” Han Solo)</p> <p>What is STEAM? Science Technology Arts and Mathematics. What are the key elements of a STEAM approach, and how does it connect to the Force? Form and functional design in a real world problem solving context. If you are looking for ways to engage your students in challenging real world problem solving that incorporates design and testing regimes in an integrated cross-curricular approach, then this workshop is for you. The workshop challenges participants to design and test a device to prevent the fracturing of an egg when dropped. Taking a STEAM approach to solving the problem will involve considering form (Arts) and functional (Engineering) design as well as drawing on principles of Science (Science) supported by data (Mathematics) to provide a solution (Technology). Don’t worry about the mess! If you say that the Force does not exist, then this is for you.</p>
<p>Enrichment Opportunities using Video Conferencing and Web Technologies</p> <p>Karen Player – Australian</p>	<p>Join the Australian Museum and Fizzics Education in a hands-on session where we look at the myriad of learning opportunities virtual excursions presents for your students.</p> <p>In this session you’ll learn how simple it is for a remote educator to engage students in chemistry and biology... in this case, you’ll be the students!</p> <p>Time will be spent on learning how easy it is to connect with Museums, Zoos, Science Centres and</p>

Museum Ben Newsome – Fizzics Educational	more from across the world using your iPad, computer or dedicated VC system, with plenty of take home ideas that can be implemented straight away in your school.
Evolution of Australian Biota Australian Museum	In this sessions you will examine fossils, specimens and animals to investigate the evolution and adaptations of Australian animals and plants.
Fluorescent Fingerprints Ivana Poulton Optimum Technology	This workshop is designed to be fun both for the teachers and the students. It's a practical demonstration the phenomenon of fluorescence and the uniqueness of fingerprints. Fluorescent Light Powder Kits and components demonstrated can be purchased by your school. The fluorescent powders are easy to use and clean up.
Getting Quality Data You're your Experiments Stuart Lewis Scientrific P/L	How to stop from turning the Dark Side of the Force troubleshooting your probes Are you getting data readings with your electronic sensors that you don't expect? Would you like to find out more about how the sensors should be used to obtain more reliable data? Participants will engage in a range of experiments using wet chemistry sensors with appropriate protocols to avoid situations that produce unexpected results. Some of the experiments include: conductivity, acidity, ion specific electrodes and dissolved oxygen. This is a hands-on session and ideal for all teachers of science and laboratory technicians who deal with wet chemistry experiments including water quality testing. All data will be shared using "bring your own device" technology.
GOOGLE Apps Phil Hogg SCS	<ul style="list-style-type: none"> • Google Apps – using collaborative spreadsheets and forms for logging experiments and equipment • Screencasting experiments using a document camera • YouTube capture/Adobe Spark – video creation and editing on a Smartphone • Participants will need to bring their own Smartphone THIS IS A DOUBLE SESSION
Identifying Minerals Australian Museum	In this workshop you will learn how to identify the common rock forming minerals and be able to tell the difference between sedimentary igneous and metamorphic rock. Geology Rocks!
If it doesn't work – It's Physics Phil Jones – Logical Interface	In this workshop we will examine <ul style="list-style-type: none"> • Data Logging Technology is an extremely powerful data acquisition and analysis tool for physics. I will examine a number of rarely used physics experiments using data loggers. • PC Based Signal Generator and Oscilloscope (CRO). • Video Analysis of Motion. An accurate and exiting way to analyse motion. • Physics modelling with Interactive Physics (IP) software. • Simulation software - Krucible and Yenka are revolutionary software for creating simulations and demonstrating experiments that are impractical in the secondary science lab.
In da Pendant Genes Steve Garrett Bio-Tek Services Pty Ltd	Prepare your own DNA which you will take away wearing in a pendant! In this session, cells from the inside of your mouth (buccal cells) are harvested, lysed, enzyme treated and the DNA extracted. This DNA is then collected, sealed in a glass pendant and worn around your neck. <i>In Da' Pendant Genes</i> is an activity that was adapted for the Queensland Government's BioBus mobile biotechnology exhibition for schools and is an excellent example of DNA extraction. This simple lab activity requires no specialized equipment or stains, yet allows you to conduct a real-world laboratory procedure that can be used to extract high quality DNA from a wide variety of organisms. This DNA could be used in a number of further laboratory applications if desired. All participants will receive an Instruction Manual for this activity.

<p>Joining the YouTube Frenzy</p> <p>Margaret Shepherd SCS</p>	<p>This workshop is designed to provide an opportunity for Laboratory Technicians to learn how to use YouTube capture to make a video for using science equipment and then to upload it to YouTube.</p> <p>Participants will need to bring their mobile phone and iPad or laptop</p> <p>THIS IS A DOUBLE SESSION</p>
<p>Key Experiments for the 7-10 Curriculum</p> <p>Stuart Lewis Scientrific Pty Ltd</p>	<p>Inquiry approaches using data loggers in Middle School Science (A quick training course in using the Force influencing the weak of mind in year 7 to 10)</p> <p>Are you looking for innovative ways of collecting data with some key experiments from the Australian Curriculum: Science?</p> <p>A range of key experiments will be setup in a series of workstations with which participants can engage. The experiments will be selected from: heat transfer and thermal energy; motion studies; collisions; environmental monitoring; human physiology; Greenhouse effect and energy and power of electrical circuits. A range of sensors will be utilised to collect real time data for analysis and interpretation. Ideas for further investigations will also be explored.</p>
<p>Maintaining Science Equipment</p> <p>Graeme Auchterlonie</p>	<p>Basic maintenance and repairs to science equipment e.g. VDG generator, microscopes, meters, pH meters and more.</p> <p>Bring any equipment with you to repair</p>
<p>Microbiology</p> <p>Steve Garrett Bio-Tek Services Pty Ltd</p>	<p>Microbiology offers a rich array of meaningful learning experiences, but is also a potential minefield!</p> <ul style="list-style-type: none"> • Do your current laboratory practices represent 'best practice'? • What is it possible for you to do and what should be avoided? <p>This session utilises a combination of discussion and hands-on. Workplace Health and Safety issues relevant to microbiology will be discussed as well as how to enable your school laboratories to achieve Physical Containment Level One (PC1), which is the minimum standard required for microbiology.</p> <p>This session will also address:</p> <ul style="list-style-type: none"> • The ABC of media: preparation, sterilization and storage. • Characteristics of selected low risk organisms. • Pure culture techniques, subculturing and preservation. • Control of microbial growth- physical and chemical methods. <p>As well as practical components associated with:</p> <ul style="list-style-type: none"> • Serial Dilutions & Enumeration. • Bacterial Transformation • Safe investigation and characterising of soil bacteria. • Water quality testing- chromogenic analysis. • Bioremediation by oil eating bacteria. <p>THIS IS A DOUBLE SESSION</p>
<p>MicroChemistry</p> <p>Pamela Waller – St Paul's BOORAGUL</p>	<p>Participants will learn how to make CO₂, H₂ and O₂ in syringes, then to combine Hydrogen and oxygen to prepare gaseous H₂O.</p> <p>Come expecting a hands-on workshop – this technique can be used to make a variety of gases for use in classrooms.</p> <p>It's fun and easy! Easy to learn how. Gases ready in 5 minutes! Great labs! Great demos! Students enjoy making gases. It's visual! Best way to 'see' a gas is to watch it being produced. It's microscale in terms of quantities, but large enough to see - 60 mLs It's inexpensive. A syringe of CO₂ costs less than 1 cent to produce. It's green - little or no chemical wastes.</p>

<p>Microscope Repairs</p> <p>Rod Aggett</p>	<p>Most of the time when a teacher is having trouble with a microscope, they are a few quick thing Lab tech can look for to get the Microscope back in the class room. The work shop will cover how to identify and resolve these issues</p>
<p>Practical Photosynthesis</p> <p>Peter Ball Southern Biological</p>	<p>Photosynthesis is a key component of middle year science as well as senior biology, but it is an abstract subject that is considered “one of the most difficult topics to teach”</p> <p>At least part of the difficulty is that there are very few reliable experiments that can dispel students’ misconceptions and build a foundation for learning. This workshop will present some experiments that are simple to set up and easy to scale for classes of any size. Join us for some practical hands on experience with variegated leaves, water plants and algininate balls containing algae.</p>
<p>Relevant and Motivational Technology for the Biology classroom</p> <p>Phil Jones – Logical Interface</p>	<p>Sophisticated technology, once only the domain of forensic and research laboratories, is now within the reach of every science educator. Such technologies excite students and bring a sense of relevance to learning biology. In this workshop we will examine</p> <ul style="list-style-type: none"> • Digital Microscopes, Digital Eyepieces and our Australian Imaging Software, • The new generation Data Loggers and their application to Biology teaching. • Technology strategies for field work. <p>Modelling software for the new national curriculum</p>
<p>Rocks You Know</p> <p>RockHoundz</p>	<p>Build up your knowledge of rocks from what you already know. Geology rocks!</p> <p>THIS IS A DOUBLE SESSION</p>
<p>ScienceASSIST</p> <p>Rita Steffe St George Girls’ HS</p>	<p>An overview of how Science ASSIST came about, who it is available to, how it works and what it will provide. How to access and navigate the website, the type of resources that are currently on the site and what will be developed in the future.</p>
<p>Setting up a Mock Crime Scene</p> <p>Ivana Poulton Optimum Technology</p>	<p>The aim is for students to have fun, learn some practical uses in science and be inspired to take up science in the future course of study. SCIENCE IS NOT BORING!</p> <p>The popularity of TV crime scene shows and movies today arouses curiosity in solving a crime. In reality, it takes a team of experts - science experts, to process the evidence using the latest forensic technology available today. This workshop will cover basic: blood spatter, the importance of gunshot residue, fingerprints, shoeprints and general crime scene search. The products used in the workshop are professional products used today by the police, military and investigators. These products are also available for schools for teaching purposes.</p> <p>THIS IS A DOUBLE SESSION</p>
<p>Squid Dissection</p> <p>Dissection Connection</p>	<p>An unusual squid dissection covering organs and interesting bits</p>
<p>The Science of Waves</p> <p>Ben Newsome Fizzics Ed</p>	<p>Find out some effective ways to teach sound and light with students. Some materials are easily accessible, whilst other demonstrations need to be built yourself.</p> <p>Either way, the students will have fun working with you back at school as you’ll be armed with a variety of ways to look at energy transfer, frequency, amplitude and the Doppler effect.</p>
<p>Waves and Resonance : the Explanation of Everything from Wi-Fi to Feng Shui</p> <p>Peter Niass KeyPad Interactive</p>	<p>The concept of standing waves and resonance has been reinstated into the latest ACARA Physics curriculum, after many years in the wilderness in many state’s syllabuses. This is great news, because as we expand and deepen our understanding of the universe from the sub-atomic realm to the outer universe, we are starting to develop a deeper view of an interconnected, almost organic universe, as opposed to the classical, mechanistic world view of Galileo and Newton. In parallel with this interconnected trend at the level of fundamental Physics, we are also witness to an explosion of “interconnectedness” at the social and economic level as well.</p>
<p>What is it with Sugar?</p> <p>Peter Ball Southern Biological</p>	<p>Glucose is essential for life as we know it, but it is just one of many “sugars” that we ingest as part of a normal modern diet. We have evolved to enjoy sweet flavours, and yet overindulging can be detrimental to our health. So, what is it with sugar?</p> <p>This workshop will explore some enzyme reactions that explain how sugars are metabolised and why these foods, that are so essential for life, can also pose health problems. Participants will compare some interesting enzyme experiments and, at the same time, see how various different sugars find their way into our dietary intake.</p>

REGISTRATION FORM

(Please ensure to keep a copy for your personal records)

NAME:

ADDRESS:

SUBURB/TOWN:

STATE:

POSTCODE:

PHONE:

EMAIL:

SCHOOL:

ASET MEMBER:

YES /NO

ASET-NSW MEMBER No.:

SPECIAL DIETARY REQUIREMENTS:

PAYMENT

Payment can be made by: Cheque payable to **ASET – NSW Inc.**

OR Direct deposit to

Sydney Credit Union

Account name: ASET – NSW Inc.

BSB: 802-084

A/c No: 141349 (*Make sure you include your name in the description field*).

Please issue a receipt in favour of:

TAX INVOICE

On receipt and processing of your payment, this form becomes a valid Tax Invoice from ASET-NSW Inc.

ABN: **72778745840** The registration fee is **GST FREE.**

WORKSHOP SELECTION DETAILS

Please indicate your preference for workshops that you would like to attend with 1 being your first preference. The workshops may have a limited number of participants. Please indicate if you will joining us for Happy Hour!

**** Please select A and B **OR** A/B on Monday and similarly E and F **OR** E/F on Tuesday****

Session A - Monday Workshops

	Could Data Save Humpty?
	Fluorescent fingerprints
	ScienceASSIST
	Waves and Resonance
	Microchemistry
	What is it with Sugar?

Session B - Monday Workshops

	If it Doesn't work – it's Physics
	Evolution of Australian Biota
	Be Compliant in WHS & GHS
	Practical Photosynthesis
	The Science of Waves

Session A/B - Monday – this is a DOUBLE session

	Setting up a Crime Scene
	Working with Glass
	Agarose Gel Electrophoresis
	Cosmetic Chemistry
	Rocks you Know
	Google Apps

Session C - Monday Workshops

	Relevant and Motivational Technology for the Biology classroom
	Identifying minerals
	Key experiments for the 7-10 Curriculum
	Microscope repairs
	Squid dissection
	The Science of Waves
	In da Pendant Genes

	Happy Hour
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Session D - Tuesday Workshops

	ScienceASSIST
	If it Doesn't work –it's Physics
	Microchemistry

	Squid Dissection
	Getting Quality Data from Experiments

Session E - Tuesday Workshops

	Microscope repairs
	Practical Photosynthesis
	Waves and Resonance
	Maintaining Science Equipment
	Could Data save Humpty?

Session F - Tuesday Workshops

	What is it with Sugar?
	Waves and Resonance
	Be Compliant in WHS & GHS
	Relevant and Motivational Technology for the Biology Classroom
	Maintaining Science Equipment

Session E/F - Tuesday Workshops -- this is a DOUBLE session

	GOOGLE Apps
	Rocks you Know
	A Touch of Glass
	Setting up a Mock Crime Scene
	Cosmetic Chemistry
	Joining the YouTube Frenzy
	Microbiology

Session G – Tuesday Workshops

	Fluorescent Fingerprints
	In da Pendant Genes
	Brains Trust Q & A session
	Enrichment Opportunities using Video Conferencing and Web Technologies
	Relevant and Motivational Technology for the Biology classroom