2019 REGIONAL NSW

FUTURE FOCUSED LEARNING (STEM) CONFERENCE

PROMOTING EDUCATIONAL EXCELLENCE IN A STEM ENRICHED WORLD

DAY 1 WORKSHOP OPTIONS

29TH APRIL 2019

Crowne Plaza Hunter Valley

Presenter(s)	Workshop Title	Workshop Synopsis
Leanne Cameron	The Rube Goldberg Machine **Target Audience:** Primary and Secondary teachers	Come and explore an incredibly adaptable STEM project that suits any age, skill level or time frame – the Rube Goldberg Machine: the perfect open-ended STEM project. For those new to the concept, a Rube Goldberg Machine is: 'a device or apparatus that is deliberately over-engineered to perform a simple task in a complicated fashion, generally including a chain reaction.' (Wikipedia). In this session you will be introduced to a variety of ways it can be implemented to fit most STEM classes. In a typical project, students are supplied with a limited number of resources and the team with the most innovative solution to the problem wins. In this workshop you will get to experience first-hand how much fun you can have building and learning.
Tracey Breese Kurri Kurri High School Principal	SHIFT HAPPENS **Target Audience:** Secondary teachers	Are you interested in a new way of framing secondary education? At KKHS we use a framework of REAL Projects to create new knowledge for learners. We make learners and teacher c-creators of programs and assessment. we do this through: • Changing the paradigm of teaching and learning • Transdisciplinary learning in Stage 4 • HUBS, pods and Huddles, new learning for a new century- 60 students in a HUB with a fresh look at pedagogy and the 4C's
Kim Sweeny Cessnock East Public School Principal	How to plan for Project based Learning **Target Audience:** Primary teachers	The workshop will take you step by step through the process of designing a project that aligns with syllabus outcomes and teacher professional development.
Hope Quartly Cessnock Academy of STEM Excellence K-6 STEM Project Officer	Problem Based Learning in the K-8 Classroom **Target Audience:** K – 8 teachers	Problem Based Learning in the K-8 classroom delves into the pedagogy of a student-centred classroom environment where students learn curriculum content through the experience of solving open-ended real world problems using the CASE Design Process. Learn to design engaging and authentic units of work to inspire lifelong learning, reinforce interpersonal skills and teamwork, develop a self-motivated attitude, engage high-order thinking and enrich the teacher-student relationship.
Amanda Hogan Australian Computer Academy President ICTENSW	**Digital Technologies in the new Science and Technology (K-6) and the Technologies Mandatory Year 7-8**	Investigate the scope and sequence of Digital Technologies content and skills from years K to 8 and discuss various ways to meet the requirements with students. Engage in an unplugged classification activity demonstrating computer science concepts. Explore the Australian Computing Academy activities in Blocks and Python and demonstrate mastery of introductory programming skills. Attendees should have a laptop or device with keyboard to get the most out of the session.
Dr Tim Kitchen Adobe's Senior Education Specialist for Asia Pacific	Making STEM Fun with Adobe **Target Audience:** All Educators	To complement their professional digital creativity tools, Adobe have a growing range of free and easy to use tools such as Adobe Spark that help bring to life, and add a creative edge, to the teaching of STEM subjects. In this workshop, Dr Tim Kitchen from Adobe will share how easy it is for students to construct their learning of STEM through the making of amazing digital posters, videos and online publications.
Dan Rytmeister NSW Department of Education TAS Advisor	Stage 4 Technology Mandatory Implementation **Target Audience:** Secondary	An introduction to the new Technology Mandatory Syllabus including the new content in Digital Technologies and Agriculture.

Barbara Ryan NSW Department of Education K-6 STEM Curriculum Project Advisor	K-6 Digital Technologies Update **Target Audience:** Primary teachers	The Digital Technologies strand of the K-6 Science and Technology syllabus provides students with opportunities to investigate existing technologies and create digital solutions. Within this workshop, participants will develop an understanding of how digital technologies can be applied across all the strands of the K-6 Science and Technology syllabus to meet student learning outcomes.
Karen Taylor-Brown Co-founder STEM Specialist Media Refraction Media	STEM + X and the Careers of the Future **Target Audience:** Secondary teachers	Careers with STEM magazines aim to smash stereotypes, celebrate diversity and showcase real life STEM career pathways. This workshop will demonstrate the Careers with STEM resources, the STEM + X narrative and real-life case studies of exciting STEM + X careers.
Lindsay Moss StarTime Studios CEO	Introduction to Green Screen in the Classroom **Target Audience:** Primary and Secondary teachers (Specifically Stage 3 & 4)	Focus Areas * ENGLISH & SCIENCE Other Focus Area VISUAL LITERACY / DIGITAL ARTS Two major technological innovations have meant that filmmaking is becoming ubiquitous as a tool for teaching and learning: 1) The smart device and 2) YouTube. Filmmaking is no longer a “bells & whistles add-on" to pedagogy - its arguably a tool central to modern day literacy. The process itself develops core future focussed skills in collaboration, critical thinking, communication and creativity. The issue for many teachers is... how? How can I use this tool effectively in my practice? In this workshop, we show you how you can apply filmmaking to achieve cross-curricula outcomes in learning areas such as Science and English. In this highly engaging workshop, you’ll be working with iPad and green screen technology to open possibilities on how to work with your own students. This will be a hands on experiential workshop where teachers create their own mini reports. They will be shown some case studies of student work and then engage in techniques on how to produce a professional looking report. The workshop is designed to open teachers to the possibilities of digital storytelling and digital literacy as an essential 21st Century learning tool. Not only that, it is highly engaging for students. The aims of this workshop are 1) To demystify the video production process using iPads and mobile devices and 2) How to incorporate into your everyday class programs and link to the english curriculum. Participants will engage in a short exercise using iPads, incorporating green screen, filming, presenting and editing techniques. You will see how video making with iPads is highly collaborative, is imaginative and enhances communication and critical thinking skills.
Joanna Burk Modern Teaching Aids Business Development Manager for STEM & Robotics	Primary Robotics **Target Audience:** Primary teachers	STEM plays an ever-increasing importance in present day society. Robotics is a good example of this and Primary schools can play a decisive role in preparing children for their future. If you are looking at setting up a robotics program in your school or would like to add to your digital technology program this workshop will provide you with selection of robots suitable for the Primary years offered by MTA. Feel confident in your ability to use technology tools in order to adopt them into their classroom activities by having a hands-on experience and explore the lesson plans available and relevant links to the NSW Science and Digital Technologies Curriculum. On offer at the workshop will be the Dash, Blue Bot, LEGO Education WeDo 2.0, LEGO Mindstorms EV3, and the new Flip Robot.

Matthew Priestley Community Engagement Officer NSW Department of Eduacation	Indigenous Perspectives in STEM **Target Audience:** Primary and Secondary teachers	Synopsis to be advised
Shelley Wilson Science and Engineering Challenge The University of Newcastle	Hands-on STEM with the Science and Engineering Challenge **Target Audience:** Primary and Secondary teachers	In this hands-on workshop, participants will experience what it is like to be a student at a Science and Engineering Challenge (SEC) event. In groups of 2-4, participants will design, build and test small towers, with limited resources and defined constraints. Towers will be scored based on their ability to remain structurally sound under load, and, how well they can withstand a simulated earthquake! The workshop will conclude with a reflective Q&A session and an opportunity to gain additional insight into SEC Event Days (year 9-10 students), Discovery Days (year 5-6 students) and Build Me a Future Days (year 7-8 students).

Presenter(s)	Workshop Title	Workshop Synopsis
Leanne Cameron	The Rube Goldberg Machine **Target Audience:** Primary and Secondary teachers	Come and explore an incredibly adaptable STEM project that suits any age, skill level or time frame – the Rube Goldberg Machine: the perfect open-ended STEM project. For those new to the concept, a Rube Goldberg Machine is: 'a device or apparatus that is deliberately over-engineered to perform a simple task in a complicated fashion, generally including a chain reaction.' (Wikipedia). In this session you will be introduced to a variety of ways it can be implemented to fit most STEM classes. In a typical project, students are supplied with a limited number of resources and the team with the most innovative solution to the problem wins. In this workshop you will get to experience first-hand how much fun you can have building and learning.
Tracey Breese Kurri Kurri High School Principal	SHIFT HAPPENS **Target Audience:** Secondary teachers	Are you interested in a new way of framing secondary education? At KKHS we use a framework of REAL Projects to create new knowledge for learners. We make learners and teacher c-creators of programs and assessment. we do this through: • Changing the paradigm of teaching and learning • Transdisciplinary learning in Stage 4 • HUBS, pods and Huddles, new learning for a new century- 60 students in a HUB with a fresh look at pedagogy and the 4C's
Kim Sweeny Cessnock East Public School Principal	How to plan for Project based Learning **Target Audience:** Primary teachers	The workshop will take you step by step through the process of designing a project that aligns with syllabus outcomes and teacher professional development.
Hope Quartly Cessnock Academy of STEM Excellence K-6 STEM Project Officer	Problem Based Learning in the K-8 Classroom **Target Audience:** K – 8 teachers	Problem Based Learning in the K-8 classroom delves into the pedagogy of a student-centered classroom environment where students learn curriculum content through the experience of solving open-ended real world problems using the CASE Design Process. Learn to design engaging and authentic units of work to inspire lifelong learning, reinforce interpersonal skills and teamwork, develop a self-motivated attitude, engage high-order thinking and enrich the teacher-student relationship.
Dr Jennine Beekhuyzen Tech Girls Movement Foundation	STEM + Entrepreneurship = Success! **Target Audience:** Primary and Secondary teachers	In this STEM + Entrepreneurship workshop, we unpack problem solving, design thinking, systems development, and pitching your idea. Focusing on local community problems, participants will learn tried and tested methods for delivering STEM Entrepreneurship in the classroom. Join us for a fun, interactive session, and pick up some useful tips you can translate directly to the classroom.
TBA	**Cyber Security** **Target Audience: Secondary teachers**	Hand on activities to support Cyber Security iSTEM focus area
Gillian Hewitt Imaginaturalists	Imaginaturalists: The Super Power of Observation	**Drawing is the best way of seeing!** Art is the language of science! Without the visual communication provided by illustrations and graphics, scientific concepts can become very complex to understand. In this workshop, learn how important the skills of careful observation are to be able to make sense of our world. Learn drawing skills that will transform your doodles and jottings into three-dimensional science illustrations. We will explore these techniques using natural objects from a Natural History Laboratory and then learn to look further, finding more details to complete your observations using

	Target Audience: Primary teachers	microscopes and fun, hands on techniques of print making from natural objects. Inspire your students to stop, slow down and look at what is around them. Introduce the building blocks of scientific enquiry in them with fun, creative, experiential, cross-curricular learning that will increase their confidence in all aspects of their education. If I have ever made any valuable discoveries, it has been due more to patient attention, than to any other talent Isaac Newton
Lewis Quill Obelisk Systems Founder and Director	Scratch and Python, Joining the dots with Hardware **Target Audience:** Stage 3 - 5	Students often begin their coding journey with block-based languages like Scratch, before adventuring on to others like Python. The workshop will focus on developing the links from Scratch to Python and how students can translate their code. Using StarLAB as a project-based learning tool, we show how a simple understanding of electronic sensors with Scratch can rapidly evolve into an advanced data collection program with Python.
Andrew Balzer NSW Department of Education STEMShare Leader **Kath Lollback** NSW Department of Education STEMShare Community Leader	WeDo Lego STEMShare **Target Audience:** Primary and Secondary teachers	Lego WeDo 2.0 STEMShare - Hands on exploration in which we look at integrating the technology into the curriculum and explore it's potential in classroom practice. Microbit STEMShare - Enjoy a deep dive into the BBC Microbit in which we demonstrate how to code, design and utilise not only the Microbit itself, but also the Grove Inventor kit and tie the technology with educational pedagogy.
Dan Rytmeister NSW Department of Education TAS Advisor	Anki Cars / Crack the Code Taster **Target Audience:** Secondary stage 4 teachers	This session will provide an overview on two of the NSW Department of Education projects that have been developed to support the implementation of the new Technology Mandatory Syllabus. 'Crack the code' is an Arduino based unit of work that allows students to develop skills in coding and circuit hardware, as they produce a security alarm for a school bag. 'Fast and curious' uses the Anki Cars race set controlled by a Raspberry Pi network hack developed by Oracle to explore the concept of smart cities and the Internet of thing (IoT) as digital systems.
Mark Tyler NSW Education Standards Authority (NESA) Inspector, Technology Education	Technologies Update **Target Audience:** Secondary teachers	The workshop will provide an overview of the secondary syllabus projects that NESA has undertaken since 2016 including Technology Mandatory Years 7-8, Stage 5 Technology syllabuses and the work being done to develop new computing syllabuses in Stages 5 and 6. The workshop will unpack significant aspects of the new syllabuses and changes to existing syllabuses, provide examples of projects being undertaken in schools and provide links to resources developed by NESA. There will be an opportunity to ask questions at the end of the workshop.
Dr Peter Howley Faculty of Science, University of Newcastle Assistant Dean - Outreach and Community (Faculty of Science)	STEM Investigations (Statistics in Action) & UoN STEM Activities	**STEM for students and STEM for teachers.** This workshop begins by asking 'what are you interested in?' Is it Health, Psychology, Environmental Science, Marine Life, Cooking, Cars, Sports, ...? What has interested you within that area, what questions may you like to investigate or address? You will learn about (and consider for yourself) a PBL activity that engages Stage 3-6 students in teams to identify their own questions within their own passion or area of interest, and work toward collecting data to ultimately creatively communicate and report upon, in poster format (submitted online), their investigation ... and addresses Discipline-specific syllabus strands

	Target Audience: Primary and Secondary teachers	and outcomes, and all curriculum General Capabilities! Australian school teachers are saying “21st Century learning at its best”, “motivates and engages students”. Industry mentors are saying “provides students a unique opportunity”. Students are saying “engaging, educational and enjoyable”. Mini EVs will be demonstrated as an example of applying experimental design to identify the key factors that influence outcomes such as Mini EV speed and endurance, along with other example projects and investigations. Free videos supporting the learning of statistical concepts, along with other UoN opportunities for student engagement in STEM will be discussed. And, for the teachers and industry personnel keen to develop leadership, authentic STEM skills and examples, and the T-shaped skill set, the UoN's Graduate Certificate in STEM (online program), led by Faculty of Science and co-delivered with the Faculty of Engineering, will be discussed.
Glenn Lawrence Design Nuts	Design Sprint: Internet of Things (Unplugged) **Target Audience:** Primary and Secondary teachers – K - 8	If you want a basic strategy to get your students design ready for the new Science and Technology Syllabus then jump into this 1 hr unplugged design sprint. You will walk away with fun, hands on activities to use in your classroom, including a simple 5 step strategy your students can follow to imagine their own amazing connected smart products (eg. Fitbit Activity Tracker). The session will scaffold how best to use big picture thinking, problem solving and creativity to develop design and systems thinking skills in your students. Suitable for any teacher K-8 looking for a simple but smart approach to designing for the Internet of Things.

Day 2 – Deep Dives – Further information to follow

1. Scratch Maths – Integrating computational thinking and maths
2. SHIFT Happens
3. How to plan for Project based Learning
4. STEM Curriculum Writing
5. Crack the Code
6. Fast and Curious (Anki Cars)
7. Future Focused Learning K-6
8. Cyber Security
9. Introduction to Biotechnology in the Classroom
10. GPS Cows
11. Tetrix Robotix
12. Digital Technologies MOOCs
13. Microbits