Primary STEM Stream

F23 Administration Building

8:00AM – F23 Administration Building – *Registration*

9:00AM – Eastern Avenue Auditorium – *Official Opening, Acknowledgement of Country, and Opening Plenaries*

10:30-11:00AM – *Move to F23 Administration Building, morning tea*

11:10AM *Master of Ceremonies*

Associate Professor Jennifer Way, Sydney School of Education and Social Work, STEM Teacher Enrichment Academy, The University of Sydney

11:15AM *Primary STEM Keynote Speaker 1*

Dr Katherin Cartwright, President of the Mathematical Association of NSW (MANSW), University of Wollongong

Topic: The M in STEM

Synopsis: Each letter in the acronym STEM is equally as important. However, mathematics is often a hidden element or left out of STEM projects rather than the star of the show. What does a mathematically driven STEM approach look like? This presentation brings to light the essential mathematical elements of a STEM approach and highlights the connections between mathematics, science, technology and engineering design processes that make mathematics the glue that holds STEM together.

11:40AM *Primary STEM Keynote Speaker 2*

Dr Vanessa Pirotta, Wildlife Scientist

Topic: From whale snot to creating non-fiction children's books

Synopsis: When whale scientist Dr Vanessa Pirotta writes children's books, she enters a world full of creativity whilst still being true to the science. Find out how embracing STEAM and creativity can create colourful narratives (and science), serving as important educational resources inside and out of the classroom. Join Vanessa as she explains her journey of education and science communication from working in a zoo, becoming a dolphin trainer to one of world's most known whale scientists. Catch Vanessa on **PlaySchool**

12:05PM *Primary STEM Keynote Speaker 3*

Sophie Poisel, Head, Lang Walker Family Academy (Powerhouse)

Topic: Designing learning for a future worth inheriting – STEM education with purpose

Synopsis: Award-winning educator Sophie Poisel, Head of Lang Walker Family Academy at Powerhouse Parramatta, reimagines STEM education as a tool for agency, resilience, and connection. Drawing on programs like Powerhouse: Future Space and 50°C: Climate, Heat and Resilience, she demonstrates how real-world challenges ignite student curiosity. Sophie explores how schools can become incubators of climate solutions and innovation through interdisciplinary learning. With insights from museum–school–industry collaborations, she challenges educators to move beyond content delivery toward empowering experiences that help students shape their futures. This keynote will inspire STEM educators to embrace bold, creative, student-driven learning.

12:30PM *Primary STEM Keynote Speaker 4*

Helen Silvester, Australian Academy of Science

Topic: The LIA Framework: Enhancing science education through student agency

Synopsis: Since 2003, Primary Connections has been a leader in science education in Australia, providing resources and professional development to support primary teachers. In response to the new curriculum, Primary Connections has refined its approach by incorporating contemporary educational research to ensure its resources remain exciting and relevant to today's world. The LIA (Launch, Inquire, Act) Framework engages students with real-world phenomena and challenges, fostering curiosity and emphasising science as a collective, socially influenced pursuit. Designed to be flexible, the framework enables teachers to adapt teaching sequences to meet the diverse needs of their students. With research-backed routines that promote equity and student agency, Primary Connections helps educators create inclusive, responsive science education environments.

1:00 – 2:00PM Lunch F23 Administration Building Foyer

Workshop Session 1 - 2:00 – 2:50PM

Auditorium 1

What can students learn while making a terrarium?

Jacqueline McCarthy
Science Teachers Association NSW

Join us for an engaging hands-on teacher workshop where you'll learn to create a beautiful terrarium. This workshop aligns with the new NSW Science Syllabus for Stage Two, focusing on how living things depend on energy and materials to survive. It provides practical insights into teaching key concepts and Tier 3 vocabulary related to the atmosphere, lithosphere, hydrosphere, and biosphere. You'll leave with a completed terrarium and a wealth of ideas to bring these concepts to life in your classroom. This interactive session equips you with creative tools to inspire your students.

Auditorium 2

Story-Driven STEM: Cultivating Curiosity, Thinking and Creativity through Picture Books

Silvia Georgiades
STEM Enrichment Adviser NSW Department of Education

This workshop will explore the potential of picture books as tools for sparking meaningful STEM investigations and purposefully integrating syllabus content. By blending narrative with both open ended and structured lesson components, participants will learn how stories foster critical and creative thinking, empower students to tackle STEM challenges, and build foundational STEM skills.
Through a selection of carefully chosen picture books, participants will discover how to connect narrative to curriculum outcomes, encouraging skills such as collaboration, analysis, and innovation. This session offers practical strategies for using storytelling to enrich STEM lessons, allowing learners to engage with both the creative and analytical sides of science, technology, engineering, and mathematics, while supporting holistic learning in the classroom.

Function Room

Expanding the Acronym - STEM across the Curriculum

Chris Duker
Marrickville Public School

This session will explore one teacher's STEM journey, from delivering multidisciplinary units across three subjects, to pedagogical transformation that is now applied across all key learning areas. It will detail Marrickville Public School's participation in the Sydney Uni STEM Teacher Enrichment Academy and share the successes and failures of implementing STEM in an RFF capacity to students across K-6 for the last four years. Participants will explore the teaching philosophies that underpin STEM and consider how these can be utilised to engage all students in inquiry based learning. They will view a range of units, lessons and activities that use the Design Thinking Framework and consider how these could be adapted for their own school context. Together, we will decide once and for all if the acronym should be STEM, STEAM, STREAM, eSTEAM or whether we should just dig deep into a Scrabble bag and come up with something new.

Board Room

STEM 123

Jennifer Way & Vilma Galstaun
Sydney STEM Teacher Enrichment Academy

Over the past 10 years, the Sydney STEM Teacher Enrichment Academy primary team has developed an effective three-level approach for scaffolding the development of STEM skills for both teachers and their students. In this workshop we provide an overview of the three levels (1. STEM Skills, 2. Design Process, 3. Integrated Project) together with some examples of activities at each level. For more details see, *STEM 1,2,3: Levelling Up in Primary Schools* https://doi.org/10.3390/educsci12110827

Workshop Session 2:50 – 3:40PM

Auditorium 1

Creating Cross-Disciplinary STEM Experiences

Ian Holden
Justine Pembroke, Eleni Kyritsis, and Joanne Knight
Modern Teaching Aids

With guidance from Ian Holden, a respected leader and advisor in sustainable education solutions, this workshop will provide educators with practical frameworks to facilitate "lightbulb moments" and connect classroom learning with real-world impact. Participants will explore how to integrate interdisciplinary STEM concepts and engage hands-on with three of our most innovative resources that support deep learning and engagement. You'll also hear firsthand from STEM teachers nationwide about their successful implementation of impactful STEM lessons across all year levels, plus insider tips to help you do the same.

Auditorium 2

Adaptation Innovation: Engaging Students through STEM based Enrichment Design

Alex Heagney
Taronga Zoo

At Taronga Zoo Sydney, zookeepers and volunteers dedicate significant time to designing enrichment activities that replicate natural behaviours and keep animals mentally and physically stimulated. This hands-on STEM challenge invites students to become enrichment designers, selecting a species to focus on and developing a creative, species-appropriate enrichment tool that supports animal welfare and encourages natural behaviours. Students will research their chosen animal's behaviour, physiology, and habitat before designing an enrichment item that meets key criteria—being safe, stimulating, removable, and beneficial to the animal's wellbeing. The project promotes critical thinking, scientific inquiry, and practical design and production skills, all while engaging students with real-world applications of science and animal care. Teachers attending this session will receive a ready-to-use unit of work and comprehensive resource pack, including background information, a design brief, research and planning tools, and an evaluation checklist. This enriching and ethical science task aligns with curriculum outcomes and fosters creativity, empathy, and environmental awareness in the classroom

Function Room

Plastic Makers: A Hands-On STEM Journey for Primary Teachers

Helen Georgiou & Jon Roberts
University of Wollongong

This practical workshop is designed for primary STEM teachers looking to engage Stage 3 students in meaningful, real-world learning aligned with the NSW Science and Technology K–6 Syllabus. Focusing on the properties of materials, and Design and Technology skills, participants will explore the entire recycling process—from collecting and sorting plastic waste, to cleaning, melting, and reforming it into new products. The session highlights sustainable practices and introduces the concept of the circular economy.
Teachers will gain hands-on experience with simple (and more complex) plastic recycling tools and processes, and learn how to integrate design thinking, materials science, and sustainability into engaging classroom projects. By the end of the workshop, participants will be equipped with the confidence, curriculum links, teaching resources and practical ideas to lead their students in creating innovative solutions to real-world problems using recycled plastics.

Board Room

Start STEM in Kindy

Chris Preston
University of Sydney

This workshop encourages participants to consider the importance of starting primary school with stimulating STEM tasks. Through some practical tasks we will explore ways to scaffold young children to engage in design thinking and solve relevant, age-appropriate problems. I will share insights gained through my 20 years of teaching Science/STEM with five-year olds in their first year of school.

Workshop Session 3:40 – 4:30PM

Auditorium 1	Auditorium 2	Function Room	Board Room
Sparking STEM Curiosity in Upper Primary Students Hilary Schubert-Jones Future You In this dynamic workshop, educators will explore practical strategies to inspire curiosity and boost engagement in STEM for upper primary students. Through hands-on activities, real-world connections, and inquiry-based learning techniques, teachers will learn how to make STEM concepts exciting and relevant. The session focuses on deepening curriculum connections while fostering critical thinking, creativity, and a love for discovery—equipping teachers to create vibrant, student-centred STEM learning experiences that captivate and motivate every learner.	**Drawing for STEM** Jennifer Way & Chris Preston University of Sydney The purpose of this workshop is to encourage participants to consider the importance of supporting the development of representational drawing competence of students throughout primary school. Through some practical tasks we will explore the differences and relationships between *perceptual* drawing and *conceptual* drawing. We will share some insights gained through our research with 4-to-12-year-old children to provide some suggestions for supporting drawing development and utilising it to promote learning in STEM education.	**Transdisciplinary Learning: Making Learning Meaningful and Connected** Karen Binns ICT Educators NSW In today's complex and rapidly changing world, young people need more than isolated subject knowledge—they need the ability to think critically, solve real-world problems, and make meaningful connections across disciplines. Transdisciplinary learning provides a powerful framework for integrating curriculum content around authentic questions and real-life contexts. This session explores what transdisciplinary learning looks like in practice, sharing practical strategies and real examples from a primary classroom. Participants will learn how this approach fosters deeper engagement, builds essential digital technology and literacy skills, and supports student agency. Whether you're just beginning or looking to refine your practice, this session offers ideas to inspire.	**Making STEM connections – crossovers in the syllabus** Katherin Cartwright University of Wollongong This workshop focuses on where the connections are in the NSW mathematics and science and technology syllabuses that allow primary teachers to integrate concepts. For a STEM approach in education, our projects need to be powered by the relation between mathematics and science and technology. In this workshop Katherin will highlight some of these connections and provide hands-on experiences with tasks that can be viewed from both a scientific and mathematical lens.

4:30 – 6:00 Social and networking activities (included in registration – please **select** which option you will attend on conference app)
4:30 – 5:30 PM Engineering Tour (limited numbers) - meet at Engineering J03
4:30 – 6:00 PM STEM Festival Networking Event – TAG Family Foundation Grandstand

6:00 – 10:00 PM Dinner – The Refectory Banquet Hall, The University of Sydney (additional registration required)

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