STEM CONFERENCE

YEARS R-12

FRIDAY 28 NOVEMBER 2025

FLINDERS UNIVERSITY

STEM for a Changing World

CONFERENCE PROGRAM

HOSTED BY:

DATTA South Australia
Design And Technology Teachers Association

EdTechSA Inc.

MASA
Mathematical Association of South Australia

SASTA
South Australian Science Teachers Association

PROGRAM OUTLINE

8.00am	Registration	Tea & Coffee	The Hub
8.40am - 9.00am	Welcome & Housekeeping	
9.00am - 10.00am	Keynote Presentation	
10.05am - 10.35am	Morning Tea	The Hub
10.40am - 11.40am	Workshop Session 1	Various
11.50am - 12.50pm	Workshop Session 2	Various
12.50pm - 1.45pm	Lunch	The Hub
1.50pm - 2.50pm	Workshop Session 3	Various
3.00pm - 4.00pm	Workshop Session 4	Various
4.00pm - 5.00pm	Happy Hour	

REGISTRATION PRICES

Registration Type	Fee
DATTA, EdTechSA, MASA, SASTA Members	$160
Non Member	$250
Student Member	$55
Student Non-Member	$95
Presenters	$75

PLATINUM SPONSORS:

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KEYNOTE PRESENTATION

Associate Professor Nickolas Falkner

Nick took the non-traditional path to academia having practiced in industry for over 10 years in systems and programming, being a professional winemaker for about five years, among other things. Nick received his PhD from the University in Adelaide in 2007 and has served in many academic roles, to his current position as Deputy Head of the School of Computer and Mathematical Sciences. Nick is an award-winning teacher and conducts research into a number of areas: computer network design and development, privacy preservation, AI ethics, and educational research, with a focus on increasing student participation, retention, and enthusiasm. He works extensively in education beyond the traditional borders of the University and is heavily involved in outreach to industry, government, and other educational sectors.

What do I mean when I talk about AI?

Technology changes quickly and our ability to engage with it, understand it, and teach it requires us to keep up with these changes. This gets harder when new technologies come onto the market and either change or overwrite our existing understanding of the words and concepts that we use to describe these technologies. For example, the term Artificial Intelligence has had many actual and implied meanings over the last 50 years, with the rise of Generative AI adding even more layers of meaning. This is important for several reasons, as the foundational approaches, technologies, and footprint of all these different types of AI can change how we want to talk about and teach these technologies. In this talk, Nick will briefly describe the technological foundations of today's Generative AI to explain the difference between the design and use of machine learning and large language models. Knowing what we mean when we talk about AI matters in our teaching, usage, and presentation of this important and increasingly dominant technologies.

TRANSPORT INFORMATION

Car Parking

- Paid parking applies Monday to Friday, 9.00am – 5.00pm.
- You can choose one of the following casual parking options:
  - Start a session via the CellOPark app (recommended for visitors), OR
  - Use one of the on-campus visitor parking machines (located in selected car parks).
- Visitor parking is charged at $3.75 per hour.
- Please ensure you park in a general (white-lined) bay. Some car parks may have time limits or restrictions.

Public Transport

Train

Flinders University is easily accessible via the Flinders Railway Line, with Flinders Station located on campus.

- Travel from Adelaide CBD to Flinders Station takes approximately 22 minutes.
- Catch the FLNDRS service (City to Flinders).
- Once on campus, you can either walk or take a free loop bus to The Hub.

Free Campus Loop Buses

Flinders University operates three free campus bus services, Monday to Friday from 7.00am to 6.00pm (excluding public holidays).

- All buses are colour-coded and run on continuous loops.
- Get off at the Registry Road stop for access to The Hub and central conference venues.

Loop Bus Options:

- **Campus Connector (Red)**
  - Links: Bedford Park main campus, Flinders Station Plaza (Car Park 12), Sturt campus, Flinders Train Station / HMRB
  - Frequency: ~ every 15 minutes
- **Tonsley Link (Yellow)**
  - Links: Tonsley campus, Ring Road (Car Parks 3 & 4), Sturt campus (Car Park 13), Bedford Park
  - Frequency: ~ every 15 minutes
- **Station Express (Blue)**
  - Direct service from Flinders Train Station / HMRB / Station Plaza (Car Park 12) to Registry Road
  - Frequency: ~ every 10 minutes

FIND OUT MORE ABOUT FLINDERS TRANSPORT SERVICES HERE.

WORKSHOP OUTLINE

SESSION 1
10.40am - 11.40am

		Primary (R-6)	Junior Secondary (7-10)	Senior Secondary (10-12)	**Target Audience**	Design & Technologies	Digital Technologies	Mathematics	Science
1.01	The 'M' in STEM: First Nations Rangers Caring for Country	●					●	●	●
1.02	Inclusion, Equity and Engagement in all STEM subjects	●				●	●	●	●
1.03	LEGO Education Science Unlock the "aha" moment in every learner	●				●			●
1.04	Inclusive STEM classrooms that support learning for everyone		●	●				●	●
1.05	Exploring a Design Thinking Process	●	●			●	●		
1.06	Mixing my toasties to explore deeper connections	●	●						●
1.07	Variables vary – algebra, animation and ways of thinking		●					●	
1.08	Bushfires: An exploration in maths and science		●					●	●
1.09	The Maths behind AI			●			●	●	
1.10	Using Excel to improve learning outcomes for Science experiments		●	●					●
1.11	Back to Basics - Modern use of flash cards		●	●		●			●

SESSION 2
11.50am - 12.50pm

		Primary (R-6)	Junior Secondary (7-10)	Senior Secondary (10-12)	**Target Audience**	Design & Technologies	Digital Technologies	Mathematics	Science
2.01	STEM in the Wild: An Interdisciplinary Approach to Inquiry-Based Learning with the Zoo	●				●	●	●	●
2.02	STEM Showdown	●				●	●	●	●
2.03	Inclusion, Equity & Engagement- Leading Effective Mathematics teaching approaches to drive STEM Outcomes in LOW SES schools	●						●	●
2.04	Building connections - Using advanced microscopy to engage and inspire	●	●				●	●	●
2.05	Mythbusting Bad Science	●	●	●					●
2.06	From Classroom to Cutting-Edge: Empowering Students through Project X	●	●	●		●	●		
2.07	A conversation about the importance of calculation		●					●	
2.08	STEMSEL STEM AI IoT Hands On Learning Resources		●	●		●	●	●	●
2.09	Integrating Space technologies		●			●	●		●
2.10	Laser Technology and Adobe Illustrator			●		●	●		
2.11	STEM for a Changing World			●		●	●		●

SESSION 3
1.50pm - 2.50pm

		Primary (R-6)	Junior Secondary (7-10)	Senior Secondary (10-12)	**Target Audience**	Design & Technologies	Digital Technologies	Mathematics	Science
3.01	Make your art sing	●				●	●		●
3.02	Patterns in Nature - First Nation Perspectives Year 9 Numeracy	●	●					●	●
3.03	SACOME STEM Digital Technologies Program	●	●				●		●
3.04	Interactive 360 Images for Inquiry Learning	●	●				●		●
3.05	Integrate to Innovate: Science, Maths & Digital Tools in Project Based Learning	●	●				●	●	●
3.06	Empowering Students through Filmmaking and Media Skills: Fostering Digital Literacy, Creativity, and Ethical Communication	●	●			●	●		
3.07	Game-based Stage 3-5 STEM resources for cross-disciplinary teaching of Evolutionary Science in the context of Aboriginal and Torres Strait Islander Histories and Cultures	●	●						●
3.08	10 teaching ideas to put the action into future-focused science dispositions.	●	●	●					●
3.09	Flowing into Calculus			●				●	
3.10	AI, Data Science, and Outbreaks: Teaching the Next Generation of Disease Detectives			●					●

SESSION 4
3.00pm - 4.00pm

		Primary (R-6)	Junior Secondary (7-10)	Senior Secondary (10-12)	**Target Audience**	Design & Technologies	Digital Technologies	Mathematics	Science
4.01	Embedding Aboriginal Contexts: A STEM Approach towards Cultural Inclusivity and Scientific Inquiry	●	●						●
4.02	AI Without Borders: Connecting Learners Through XR, Global Collaboration, and Inclusive STEM Futures	●	●			●	●		
4.03	South Australian Investigating with Mathematics Competition	●	●					●	
4.04	Shoebox STEM	●	●			●	●	●	●
4.05	From Earth to Orbit: The Science of Plants for Space and Sustainability	●	●						●
4.06	Space and Astronomy as a middle school elective subject		●					●	●
4.07	How to ... on the new CASIO fx-1AU Graph			●				●	
4.08	From E-Waste to Opportunity: Harnessing Real-World STEM for Sustainable Futures			●		●	●	●	●
4.09	CubeSats for hands-on, real-world STEM education - How you can implement space technology into your classroom!			●		●	●	●	●
4.10	Tiny Homes, Big Thinking			●		●	●		

WORKSHOP DESCRIPTIONS

SESSION 1 | 10.40am - 11.40am

1.01 The 'M' in STEM: First Nations Rangers Caring for Country

Caty Morris, CSER University of Adelaide; Aboriginal and Torres Strait Islander Mathematics Alliance

The 'M' in STEM: First Nations Rangers groups Caring for Country

Across Australia, First Nations Ranger groups are increasingly using digital technologies to care for Country, including the monitoring of native and feral animals. This approach merges traditional ecological knowledge with contemporary technologies to intensify land management, to preserve culture and to conserve biodiversity. These digital technologies can include drones, geospatial systems, GPS tracking, mobile tables and apps, and camera traps.

After an introduction to the 9 rich contexts in the Aboriginal and Torres Strait Islander Histories and Cultures cross-curriculum priority in the Australian Curriculum: Mathematics, participants will explore how the rich context of Caring for Country/Place offers valuable learning opportunities in mathematics through statistics, combined with science and digital technologies.

Data is the raw information we collect from the world around us. When we organise and interpret it, it becomes meaningful. It helps us understand patterns, make informed decisions, and solve real-world problems, from predicting the weather to tracking wildlife. When students engage in a real-life mathematics experience through First Nations Rangers caring for Country, it connects mathematics (and science and technologies) with culture.

This workshop will investigate lessons and resources developed through a collaboration between the Aboriginal and Torres Strait Islander Mathematics Alliance and Education Services Australia. Where's The Mankarr? is grounded in a cultural context, and used with permission, from the Kanyirninpa Jukurrpa and Martu Peoples of the Western Desert of Australia. The video used in the lessons enhances students' understanding of how traditional knowledge and data combine to protect endangered species such as the mankarr (bilby).

Target Audience: Digital Technologies (Years R-6), Mathematics (Years R-6), Science (Years R-6)

1.02 Inclusion, Equity and Engagement in all STEM subjects

Hilary Schubert-Jones, UNSW/Future You

In this interactive workshop, educators will discover practical strategies to design inclusive STEM classrooms that welcome and support diverse learners. Using the free to access Future You program - an evidence-backed, research-based resource out of UNSW - participants will explore ways to challenge stereotypes, address misconceptions, and dismantle biases that can limit student engagement in STEM. Through real-world examples and adaptable activities, the session will focus on engaging underrepresented groups in STEM learning and inspiring them to see themselves in future STEM careers. Teachers will leave equipped with tools to foster equity, spark curiosity, and create student-centered learning environments where every child feels valued, capable, and excited to explore the possibilities of STEM.

Target Audience: Design & Technologies (Years R-6), Digital Technologies (Years R-6), Mathematics (Years R-6), Science (Years R-6)

1.03 LEGO Education Science Unlock the "aha" moment in every learner

Joanne Knight, Modern Teaching Aids

The new Year 1-10 hands-on science solution connects students to science concepts in a way that's never been done before, unlocking 'aha' moments for all students, supporting teachers with curriculum-aligned lessons, and engaging the whole classroom.

Target Audience: Design & Technologies (Years R-6), Science (Years R-6)

1.04 Inclusive STEM classrooms that support learning for everyone

Amelia Broadbent, Shadae James and Stefania Pulford, Thebarton Senior College

All of us learn differently. These differences have specifically to do with where in our brain we process information because different people do this differently. Interestingly, educators don't necessarily get to learn that much about how the brain works and what it means for learning if specific areas of the brain are being utilised. In 2022, Education Today stated that the average attention span of Australian students had decreased by 25% in recent years with 65% of students learning best visually. What does it mean if someone processes information visually though? What happens in your brain if you process what you read in your 'visual center'? A lot of our teaching in maths and science uses demonstrations as a way to transfer learning to our students but the science of 'Mirror' neurons is relatively new. Some of us activate the exact same area of the brain from watching as from doing but some of us don't at all. This session has some practical, hands-on strategies, through both demonstrating and doing, to help us differentiate for all students.

Target Audience: Mathematics (Years 7-12), Science (Years 7-12)

1.05 Exploring a Design Thinking Process

Cameron Hocking, Makers Empire

Design Thinking is a powerful process for identifying problems and creating solutions. In this workshop you'll be guided through a design thinking process that you can use with students to enhance their research, empathy, iteration and prototyping skills. You'll also discover useful resources for implementing design thinking processes in your classroom.

Target Audience: Design & Technologies (Years R-10), Digital Technologies (Years R-10)

1.06 Mixing my toasties to explore deeper connections

Dr Katrina Elliott, SA Department for Education

Using an inquiry based STEM approach to develop impactful strategies for student-led investigations. Supporting students to be curious, critical and creative thinkers when designing integrated learning.

Target Audience: Science (Years R-10)

1.07 Variables vary – algebra, animation and ways of thinking

Alastair Lupton, Adelaide Botanic High School

What do students see when they look at 4x+2 or x(x+1)?

Why can we 'expand' 3(x+1) but not sin(x+1)?

How do the m and the x differ in y=mx+c?

This workshop will share an approach to middle school algebra – in particular, the Distributive Law of Multiplication – that uses animation to understand the difference between a variable and an unknown and to provide a powerful mental model for this fundamental result. With a focus on identities rather than processes, you will never "expand brackets" in quite the same way again! A freely available video resource will be shared, along with an accompanying set of materials that reinforce this way of tackling some of the big ideas in algebra.

Target Audience: Mathematics (Years 7–10)

1.08 Bushfires: An exploration in maths and science

Helen Silvester and Dr Kristen Tripet, Australian Academy of Science

Exploring phenomena through different lenses allows us to develop skills, understanding, and ways of thinking. Each lens reveals different insights about the context, depending on the disciplinary perspective that we use.

Join us for this practical workshop and explore a Year 9 learning sequence on bushfires focusing on the effects of climate change, the rate of fire spread and intensity, and cultural burning practices. Through this workshop, you will examine these factors through a mathematical and a scientific lens to see how each perspective contributes to a more complete understanding of bushfires and how we might appropriately respond to the threat of fire in Australia.

Target Audience: Mathematics (Years 7–10), Science (Years 7–10)

1.09 The Maths behind AI

Jarrad Strain, Scotch College

Reflections on a week-long investigation activity, aimed at Year 10 and Year 11 Maths Methods students - that explores the ideas of AI (from Neural Networks and Statistical Analysis)

Target Audience: Digital Technologies (Years 7–10), Mathematics (Years 7–12)

1.10 Using Excel to improve learning outcomes for Science experiments

Nicholas Criaris and James Sexton, St Johns Grammar School

Use of Excel can be a very useful tool for students when they are conducting an experiment. Attendees will be shown how to discuss an experiment that is to be undertaken, prepare an Excel spreadsheet to collect the data whilst it is being graphed (linear in nature for this workshop) in real time as the experiment is conducted. Examples will be presented and then the group will have the opportunity to then conduct an experiment with other attendees and collect data for analysis. The group will then be shown how to relate the data collected to determine a constant variable. This workshop is designed for Junior and Middle School Science teachers along with young or inexperienced teachers of Physics.

Target Audience: Science (Years 7–12)

1.11 Back to Basics - Modern use of flash cards

Paul Gavini, Modbury High School

Flashcards remain one of the simplest yet most potent learning tools—and in today's digital age, platforms like Anki and Quizlet have modernised this classic method into highly effective, interactive study systems. This session reveals how these tools leverage cognitive science—particularly active recall and spaced repetition—to significantly enhance retention, mastery and long-term memory. Research consistently shows that retrieval practice via flashcards beats passive review, strengthening neural connections and aiding durable learning. Furthermore, deliberately introducing a modest level of difficulty—known as desirable difficulty—makes learning more effective, as greater effort leads to stronger retention.

In the practical portion of the workshop, attendees will explore how Anki uses advanced spaced-repetition algorithms and rich customisation to support long-term memorisation across diverse disciplines. Meanwhile, Quizlet offers an engaging, media-rich interface with varied learning modes—such as Learn, Match, Spell and Gravity—as well as adaptive learning features and extensive shared study sets that enhance accessibility and motivation.

Target Audience: Design & Technologies (Years 7–12), Science (Years 7–12)

SESSION 2 | 11.50am - 12.50pm

2.01 STEM in the Wild: An Interdisciplinary Approach to Inquiry-Based Learning with the Zoo

Dr. Shaileigh Rowtcliff and Dr. Timna Garnett, Flinders University

This inquiry-based presentation will present interdisciplinary approaches to mathematics and science education through learning in zoo environments and primary school classrooms. The program Zoo STEM Teach will be explained, highlighting how we use the picture book The Black and White Club by Alice Hemming and Kimberley Scott as a provocation to hands-on science and maths activities at the zoo. In particular, science-focused activities in The Black-and-White Tour encourage observation of morphological features of six black and white animals at the zoo, where participants record behavioural patterns through ethograms and reflect on the role of informal learning environments in science education. Running parallel, Tall and Short mathematics-focused activities will guide learners in classifying animals by height, estimating and measuring enclosures, applying coordinate mapping, and exploring conservation-related data. Collectively, these resources foster critical thinking, measurement skills, and interdisciplinary connections by situating learning within engaging, field-based settings. These activities are supported by others conducted immediately before and after the zoo visit. Therefore, in this practical workshop, we will demonstrate the value of STEM-focused experiential pedagogy in promoting problem-solving, observation, data handling and creativity. We also show how to support student awareness of biodiversity, conservation, and the ubiquity of mathematics and science in real-world contexts of the zoo. Our hands-on examples of how classroom-based activities are used to support the zoo experience will provide participants with targeted connections that are best used before and after the Zoo STEM Day experience.

Target Audience: Design & Technologies (Years R-6), Digital Technologies (Years R-6), Mathematics (Years R-6), Science (Years R-6)

2.02 STEM Showdown

Jesse Atkinson, University of South Australia & Joanne Villis, St Dominic's Priory College

STEM Showdown is a program for Year 5/6 students designed to promote STEM (Science, Technology, Engineering and Mathematics) in the classroom. Jesse delivers the program across schools in South Australia, including in partnership with Joanne at St Dominic's Priory College.

During the Showdown, students take on a series of STEM challenges, earning points for completing core tasks and bonus points for extension activities.

In this workshop, Jesse will provide an overview of the program, while Joanne shares student testimonials and images of the initiative in action. Participants will then explore a selection of the hands-on activities — from *Power Failure to Don't Bug Me* — and discover how these challenges engage and inspire young learners.

Target Audience: STEM (Years 5-6)

2.03 Inclusion, Equity & Engagement- Leading Effective Mathematics teaching approaches to drive STEM Outcomes in LOW SES schools

Maurice Saah, Coober Pedy Area School

This workshop draws on evidence-based approaches in the teaching of Mathematics as a foundation to drive STEM Learning Outcomes in LOW SES Schools

Target Audience: Mathematics (Years R-6), Science (Years R-6)

2.04 Building connections - Using advanced microscopy to engage and inspire

Jessica Jones, Andrew Chua, Angus Netting, Inspire STEM Education Australia

The accessibility, interactivity, and ease of use of educational technology has the potential to revolutionize both teaching and student learning and engagement. Introducing advanced microscopy into the classroom offers exciting possibilities—not only for students passionate about STEM, but also for those who may not yet know their interest in these fields. Scanning electron microscopy serves as a bridge between subject areas, enhancing integrated learning designs in both primary and secondary education settings. Investigations can be tailored to individual student interests, providing multiple entry points for diverse learners. The inclusion of advanced microscopy fosters engagement across varied learning styles, showcasing real-world applications and career opportunities in STEM industries. By connecting students with the broader community, universities, and industries, this technology opens doors to meaningful collaborations. This workshop will highlight examples of how advanced microscopy can transform the classroom, offering participants hands-on opportunities to explore its potential.

Target Audience: Digital Technologies (Years R-10), Mathematics (Years R-10), Science (Years R-10)

2.05 Mythbusting Bad Science

Daniel Simons, Australian Science and Mathematics School

All around us we see science being communicated with clickbait headlines and short-form media. How, then, do we teach our students to think critically and deconstruct these ideas so that they can identify the truth, and bust the myths? This session focuses on how students at the ASMS had the opportunity to build science inquiry skills, analyse media, identify SHE impacts, and design simple experiments to test household myths. We will share the context of our unit and how this design could be applied from the early years of high-school, building these skills to support students in Stage 2 sciences.

Target Audience: Science (Years R-12)

2.06 From Classroom to Cutting-Edge: Empowering Students through Project X

Teresa Janowski, STEM Fast Track

How do we prepare students for a future where innovation, creativity, and technical literacy are as essential as numeracy and literacy? At Parafield Gardens High School, Project X—a collaboration between STEM Fast Track and Trotec Laser—has provided a compelling answer.

This hands-on, design-led program challenged students to solve real-world industry problems using advanced laser-cutting technology. Working through the design thinking process, students developed, prototyped, and refined solutions that merged creativity with precision engineering. From concept sketches to tangible products, they experienced the full innovation cycle, building both technical skills and entrepreneurial confidence.

The project not only strengthened links between classroom learning and industry practice but also created an authentic environment where students could apply critical thinking, collaboration, and problem-solving skills. Outcomes were impressive: heightened student engagement, unique design solutions relevant to community and industry needs, and a clear pathway for embedding industry-standard technologies into STEM education.

This session will share the journey of Project X at Parafield Gardens High School, including successes, challenges, and student outcomes. Attendees will gain insights into how partnerships with industry, such as Trotec Laser, can energise STEM teaching, foster innovation, and build the workforce skills that South Australia will need in the decades ahead.

Target Audience: Design & Technologies (Years R-12), Digital Technologies (Years R-12)

2.07 A conversation about the importance of calculation

Alastair Lupton, Adelaide Botanic High School

The way we have calculated has always shaped mathematics, arithmetic and numeracy, from the abacus and logarithm through to the modern electronic calculator, ubiquitous in Australian secondary mathematics classrooms for decades. However, with the explosion of other electronic technology in the mathematics classrooms, including graphing and CAS calculators, alongside laptops, tablets and phones accessing powerful online apps, are scientific calculators still relevant? Does it matter what calculative tool(s) our students in the middle years get their hands on? Does it matter how number is represented? How algebra is first interacted with? Statistical calculations performed? Should this use be planned, and what happens if it is not? These questions will be discussed, and stock will be taken of the technology options in the middle schools of 2025.

Target Audience: Mathematics (Years 7–10)

2.08 STEMSEL STEM AI IoT Hands On Learning Resources

Miroslav Kostecki, STEMSEL Foundation Inc

Make STEM engaging, relevant, and impactful for your students. Join us for a powerful, hands-on workshop and discover the runlinc AI IoT System, a revolutionary platform designed specifically for the classroom. You'll get to experience its world-first advantages: there is absolutely no software to install and no apps to download. Using any device with a web browser—a Chromebook, phone, or tablet—you can instantly connect to the runlinc controller.

In this session, you'll see how our free, AI-assisted coding resources empower you and your students to build sophisticated projects that solve real-world community problems. We'll guide you through creating smart IoT devices, from automated agricultural systems to personal health monitors, by simply using web-based controls and natural language prompts that generate code automatically. This groundbreaking approach removes the steep learning curve of traditional coding and electronics. You will leave equipped with resources that are easy to integrate into the curriculum and the confidence to implement project-based STEM learning that demystifies AI and the Internet of Things, inspiring the next generation of innovators in your classroom.

Target Audience: Design & Technologies (Years 7–12), Digital Technologies (Years 7–12), Mathematics (Years 7–12), Science (Years 7–12)

2.09 Integrating Space technologies

Susan O'Malley, St Columba College

With the guiding question "How might we use Space Technologies to improve life on Earth?" and activities developed at the Australian Space Curriculum Collaboration you will explore two STEM projects that can be easily integrated into your Science and/or Technology curriculum across Middle School. This workshop will focus on making it easy to implement STEM in the classroom with access to readily accessible resources.

Target Audience: Design & Technologies (Years 7–10), Digital Technologies (Years 7–10), Science (Years 7–10)

2.10 Laser Technology and Adobe Illustrator

Angelo Benn, Squircle Learning

Adobe Illustrator has established itself as one of the best graphic software in the design world. Its ability to work with Raster and Vector formats has given it a broad scope in the industry. However, its wide range can also challenge users (old and new).

Generally, the full training is over two days and covers detailed topics on using Illustrator with the laser machine. This 60 minute session briefly introduces Illustrator and how to use it in the context of laser cutting and engraving machine.

The session will focus on developing templates and toolbars which are the foundational tools for generating laserable artwork without getting overwhelmed with the general uses and tools of Illustrator. Not understanding how to develop your own toolbars and templates is the main reason people shy away from using Illustrator in a classroom environment.

By the end of this session, participants will learn the use of templates in a classroom environment, and will create one template and a basic toolbar to use with students. This knowledge and skill is extremely helpful for students starting off with using Illustrator.

Target Audience: Design & Technologies (Years 7–12), Digital Technologies (Years 7–12)

2.11 STEM for a Changing World

Pranay Sharma, Cardijn College

This interactive 60-minute workshop is designed to collaboratively explore practical strategies for creating inclusive STEM classrooms that engage diverse learners and motivate underrepresented groups to pursue STEM pathways. Participants will have the opportunity to learn from successful examples, such as Cardijn College's sustainability project with CSIRO, and discover how hands-on, real-world challenges can enhance equity, engagement, and critical thinking. The session will emphasis the importance of collaboration among schools, universities, industry, and the community to help broaden student aspirations. Educators will be encouraged to take away practical tools and ideas aimed at strengthening inclusion, building partnerships, and establishing meaningful connections for learners in STEM education and careers.

Target Audience: Design & Technologies (Years 7–12), Science (Years 7–12)

SESSION 3 | 1.50pm - 2.50pm

3.01 Make your art sing

Karen Butler, EdTechSA

Any piece of art can be brought to life as a digital user interface using the simple circuit boards MaKeyMaKey. If you can't afford to teach coding through expensive robotics, the MaKeyMaKey offers a way to support students to develop computational, design and systems thinking within a tight budget! Not only that, you can teach students how to create closed circuits in order to make sound. Be prepared to unleash your artistic side and create an art work that can talk back to you! Before you know it you will be STEAM ing ahead! Please bring an Internet enabled laptop with a USB A port in order to work with the MakeyMakey.

Target Audience: Design & Technologies (Years R-6), Digital Technologies (Years R-6), Science (Years R-6)

3.02 Patterns in Nature - First Nation Perspectives Year 9 Numeracy

Ana Lucia Marques Britto, Thomas More College

This workshop shares a creative approach to teaching maths by exploring patterns in nature through First Nations perspectives. Students connect numeracy to what they see around them—at school, in nature, and at home—making learning more meaningful and engaging.

Using art and storytelling, students uncover mathematical patterns in natural elements like seasons, animal tracks, and plant growth. This approach helps build understanding while celebrating First Nations knowledge and culture. Teachers will leave with practical ideas to bring maths to life in the classroom through culture, creativity, and connection.

Target Audience: Mathematics (Years R-10), Science (Years R-10)

3.03 SACOME STEM Digital Technologies Program

Andrew Grigg, South Australia Chambers of Mines & Energy

The SACOME STEM Digital Technologies Program is a co-designed initiative between industry and education, offering eight curriculum-aligned challenges: five in Automation and three in Data Science, for students from reception to Year 10. The Automation Challenges develop coding skills using Bee-Bots, Micro:bits, Micro:cars, and sensors, progressing from Blockly to Python. The Data Science Challenges introduce students to data types and digital tools, culminating in SQL-based data queries by Year 9/10. Designed for whole-school implementation, the program provides flexible, classroom-ready activities aligned with the Australian Curriculum and General Capabilities. A successful 2025 pilot across six CESA schools demonstrated strong engagement from both students and teachers, validating the program's effectiveness.

Target Audience: Digital Technologies (Years 7–12), Science (Years R-10)

3.04 Interactive 360 Images for Inquiry Learning

Claire Bowmer, Environmental Communications Volunteer and Instructional Designer

Ever wanted to use 360 video and images for generating interest and inquiry? Learning design and developing digital media is now part of teaching practice. Start small in moving towards teaching with VR with a showcase of free tools for you or your students. Consider the medium for science communication and in the classroom. Discover open source tools and frameworks for creative or currating. Apply the theory of user driven media and create a one page storyboard for an interactive image.

Target Audience: Digital Technologies (Years R-10), Science (Years R-10)

3.05 Integrate to Innovate: Science, Maths & Digital Tools in Project Based Learning

Dr Sarah Wickham & Dr David Hosken, Flinders University

This hands-on session shows how project-based learning can seamlessly braid science, mathematics and digital technologies to lift engagement and deepen understanding. We'll unpack some project ideas, then run activities you can take straight back to class. Each exemplar is mapped to Australian Curriculum v9 (Science, Mathematics, and Digital Technologies), highlights general capabilities (critical/creative thinking, ICT capability, numeracy), and includes low-cost options for resource-constrained schools. We'll share what actually worked, including pitfalls, timing, assessment approaches, and differentiation for diverse learners. Suitable for upper-primary through secondary, the session prioritises practical classroom moves over theory, so you leave with confidence, and a plan to integrate project-based learning.

Target Audience: Digital Technologies (Years R-10), Mathematics (Years R-10), Science (Years R-10)

3.06 Empowering Students through Filmmaking and Media Skills: Fostering Digital Literacy, Creativity, and Ethical Communication

Jayne Kelly & Chloe Gardner, Capture the Action

Now more than ever, students are using visual media to learn, communicate and

express themselves. Students who engage with Capture the Action use media languages, technologies and production processes to construct high quality media art works for specific purposes and audiences. Our online courses encourage digital literacy with integrity, compassion and ethical understanding in a connected world.

Target Audience: Design & Technologies (Years R-10), Digital Technologies (Years R-10)

3.07 Game-based Stage 3-5 STEM resources for cross-disciplinary teaching of Evolutionary Science in the context of Aboriginal and Torres Strait Islander Histories and Cultures

Zoe O'Hara, Deadly Science and Vera Weisbecker, Flinders University

Evolutionary biology provides vital knowledge for tackling some of our times' greatest challenges, such as antibiotics resistance, pandemic spreads, or ecosystem collapse. It is therefore crucial to make core concepts of evolutionary knowledge, as outlined across the Australian Curriculum (v.9), accessible to Australian students from diverse backgrounds. In addition, because of its universal nature, evolutionary science is an ideal connector for cross-curricular priorities, can integrate across Learning Areas and Subjects, and can be adapted to appeal to a broad range of students of all ages.

This workshop will introduce a set of free educational resources developed by Indigenous STEM organisation Deadly Science, targeted at Stages 3-5. It includes four activities and a library of 3D printable files of animal bones that expand on an existing open-access educational resource (the board game Go Extinct! Megafauna) developed by Flinders University's (non-Indigenous) evolutionary biologist Vera Weisbecker. The materials teach schoolchildren about evolution in the context of how the iconic Australian megafauna are related to each other, living animals, and humans. The extension pack expands the original games' focus by adding information on the shared history of Australia's First Nations people with now-extinct megafauna. It comes with detailed instructions and clear explanations of v.9 curriculum links. The workshop will also include practical information on how to use the resources alongside engagement with local First Nations communities. The session is ideal for teachers looking for engaging, inclusive resources that cover the curriculum in Biology and Scientific Inquiry while integrating cross-curricular priorities of Aboriginal and Torres Strait Islander Histories and Cultures.

Target Audience: Science (Years R-10)

3.08 10 teaching ideas to put the action into future-focused science dispositions.

Lara Lang, Australian Science and Mathematics School

The world is changing and the science dispositions of environmentally responsible, curiosity and open-mindedness are as much about knowledge as they are about action. Here are 10 strategies, ideas and units for putting a hands-on dispositional spin on your science teaching, linked to real and topical examples around Australia. A selection of curated resources is provided, with hints for how to engage resistant students who don't seem to care. From writing climate change books to practical inquiry into local marine issues, from launching ethical businesses to harnessing curiosity to discover the dark side of learning, these proven units range from primary to senior secondary with rigorous interdisciplinary links and audacious outcomes.

Target Audience: Science (Years R-12)

3.09 Flowing into Calculus

Anthony Harradine, Prince Alfred College

First impressions matter, it seems. In this workshop I will share with you the first impressions I give to my students about calculus at Year 11 without mentioning the word calculus. It all starts with a video a person in the shower and flows beautifully from there. If you have a graphing calculator or a laptop with access to graphing software, please bring it along.

Target Audience: Mathematics (Years 7–12)

3.10 AI, Data Science, and Outbreaks: Teaching the Next Generation of Disease Detectives

Daniella Edward, Flinders University

From AI-driven disease modelling to real-time genomic sequencing, cutting-edge technology is transforming how we track and combat infectious diseases. This workshop introduces educators to accessible, classroom-ready ways to bring these tools into STEM learning.

Using real-world case studies from recent pandemics and outbreaks, we will explore how AI algorithms, open-source epidemiological data, and interactive visualisation platforms can be incorporated into inquiry-based projects. Participants will engage in a simulated outbreak investigation, applying digital tools to track disease spread, identify "patient zero," and design targeted interventions.

By linking technology, mathematics, and health sciences, this workshop will equip educators with strategies to inspire students to see themselves as problem-solvers at the intersection of STEM and public health. No advanced coding knowledge is required — just curiosity and a willingness to explore how data can drive action in a changing world.

Target Audience: Science (Years 7–12)

SESSION 4 | 3.00pm - 4.00pm

4.01 Embedding Aboriginal Contexts: A STEM Approach towards Cultural Inclusivity and Scientific Inquiry

Caroline Dean, Department for Education

How can STEM teaching spark curiosity, creativity, and cultural inclusivity through embedding Aboriginal contexts? This hands-on workshop introduces conceptual learning about living, earth, and space systems, incorporating systems thinking with interactions and interconnections that shape the behaviour of these systems.

Participants will engage in active learning by exploring evaporation in water management, celestial patterns, and the marine ecosystem of the Gayinbara—developed in partnership with South Australian Aboriginal Nations.

Teachers will explore how to showcase First Nations Australians' scientific knowledges and achievements, providing opportunities for Aboriginal and Torres Strait Islander students see their cultures reflected, while supporting all students to engage with respect and reconciliation.

Join us to experience authentic, practical teaching and learning resources that foster deeper, cultural connections recognising diversity in science achievements and contributions.

Target Audience: Science (Years R-10)

4.02 AI Without Borders: Connecting Learners Through XR, Global Collaboration, and Inclusive STEM Futures

Colleen O'Rourke, The Hills Christian Community School

This session explores how AI, XR, robotics, and outdoor learning create immersive, real-world STEM experiences across all R–10 year levels. Participants will explore AI-driven outdoor chatbots, AI-assisted robotics projects, and data science investigations that build systems thinking, ethical digital literacy, and innovation. They will also experience student-designed immersive VR tours and virtual pen pal exchanges with Nyangatjatjara College and partner schools in Japan, where AI avatars guide exploration and share citizen scientist data. These exchanges are transforming how VR is used in education, enabling students to step into each other's environments in 360° and collaborate as if they were there in person.

Colleen will also share what ethical, guided AI integration looks like in primary and middle years, showing how scaffolded approaches help students harness AI responsibly while building curiosity, critical thinking, and future-ready skills. Educators will leave with adaptable, practical strategies to embed AI-rich, project-based learning in every year level from Reception to Year 10, fostering sustainability awareness, innovation, and ethical engagement.

Target Audience: Design & Technologies (Years R-10), Digital Technologies (Years R-10)

4.03 South Australian Investigating with Mathematics Competition

Irene Kiroff and Sharon Kennare, Mathematical Association of South Australia

Let's share the beauty of mathematics with its relevance to everyday life.

Unpack the details for how to help your students complete an investigation through a guided sequence whilst allowing differentiation to occur, their capabilities to be monitored and dispositions to be observed.

THE RESULT: enter your student's work in the South Australian Investigating with Mathematics Competition!

Target Audience: Mathematics (Years R-10)

4.04 Shoebox STEM

Lauren Congdon, Immanuel College

Many schools find it difficult to make time for STEM, and it's easy for enthusiasm to fade when time and resources are limited. This workshop shows that meaningful STEM learning doesn't require specialist spaces, lengthy units, or expensive equipment. Through simple, challenge-based activities, you'll discover practical ways to keep curiosity, creativity, and problem-solving alive in your classroom, creating small wins that help maintain the spark for STEM in both you and your students. The session will focus on achievable ideas that make STEM accessible, engaging, and relevant for learners of all ages, abilities and contexts.

Target Audience: STEM (Years 4 -10)

4.05 From Earth to Orbit: The Science of Plants for Space and Sustainability

Lieke van der Hulst, ARC Centre of Excellence in Plants for Space

How do we grow food on a spaceship? And what can that teach us about farming sustainably on Earth?

This interactive session draws on the work of the ARC Centre of Excellence in Plants for Space (P4S), where researchers are tackling the challenge of helping humans survive and thrive during long-term space exploration. The session focuses on 'STEM for Sustainable Futures', using the lens of space to transform the way we think about sustainable food and bioresource production on Earth, guided through the four Plants for Space research missions:

- Zero-waste plants
- Complete plant-based nutrition
- On-demand bioresource production
- A future-ready workforce and society

This session explores core plant science concepts such as plant needs, tropisms, and growth environments, while connecting to current real-world applications in space exploration and sustainable agriculture. The session as a whole is built up through three distinct parts, and starts with an interactive quiz to encourage embedded systems thinking. By discussing individual steps of the Plants for Space thinking process we build understanding of sustainability on Earth as well as the constraints of growing Plants for Space as a holistic issue.

1. The "Why"

A lively multiple-choice quiz introduces students to the question of why growing plants in space matters. Through the quiz we will unpack the challenges of long-term space travel, such as limited resources, nutrition needs of space travellers, and environmental constraints, and discover how plants are essential to solving them.

2. The "How"

Students move from theory to practice by creating a mini terrarium. This hands-on activity bridges space botany and Earth-based agriculture, encouraging ongoing engagement as students care for their plants back in the classroom over a longer time-period after the session.

3. The Future

A creative design challenge invites student to imagine and draw their own "space crop." Using P4S story cards (https://plants4space.com/resources/plants-for-space-story-cards), at this point of the session everything they have learned to dream up plant-based solutions for food, materials, and life-support systems in space is integrated. Students also have the time to reflect on how those innovations can shape a more sustainable future on Earth.

By building the session on the Plants for Space research Centre framework, it considers not merely the environmental impact of future crop development but also the psychological impact of the proper nutrition and exposure to plants and nature (https://youtu.be/xTo063Y0roY?si=3wdRzrsxmoHQSN4S). Blending scientific inquiry, practical activities, and creativity, this session offers a ready-to-use framework to spark curiosity in students about plant science, sustainability, and the possibilities of space exploration.

Target Audience: Science (Years R-10)

4.06 Space and Astronomy as a middle school elective subject

Kathy Coombs, Kapunda High School

Kapunda High School has offered Space and Astronomy as a STEM elective since 2022. The curriculum for this subject is centred on the science curriculum strands of science as a human endeavour and science inquiry while extending the science understanding astronomy and space related topics incorporating STEM dispositions and applications. This workshop will outline the development of the curriculum and implementation of this subject and include hands on experience of the practical investigation of latitude which incorporates mathematical and geographical understanding, and the opportunity to build your own star wheel to identify the celestial features and constellations that can be seen throughout the year based on your latitude.

Target Audience: Mathematics (Years 7–10), Science (Years 7–10)

4.07 How to ... on the new CASIO fx-1AU Graph

Anthony Harradine, Prince Alfred College

It is likely the new CASIO fx-1AU Graph(ing) calculator will soon be in the hands of students you are teaching. It has different (and better) UI compared to the CASIO fx-CG50 AU. In this workshop we will focus on how to do things in the Graph&Table application, the Statistics application, the Distribution application and touch on how to do things in the Calculation application.

Target Audience: Mathematics (Years 7–12)

4.08 From E-Waste to Opportunity: Harnessing Real-World STEM for Sustainable Futures

Dan Borgese & Denise Rule, SA Department for Education

As part of the South Australian Department for Education, Computer Recycling Services (CRS) demonstrates the circular economy in action, transforming e-waste into valuable resources while reducing environmental impact. Each year, CRS recycles over 159 tonnes of e-waste, saving enough energy to power 60 homes and diverting toxic materials from landfill. This workshop highlights how these authentic processes can inspire inquiry, data analysis, and design thinking, enabling educators to connect science, technologies, and mathematics while strengthening learners' critical thinking, systems thinking, and environmental responsibility for a changing world.

Target Audience: Design & Technologies (Years 7–12), Digital Technologies (Years 7–12), Mathematics (Years 7–12), Science (Years 7–12)

4.09 CubeSats for hands-on, real-world STEM education - How you can implement space technology into your classroom!

Edward Robinson, Robinson Aerospace Systems

Build a real CubeSat and learn how to implement space technology into your classroom with this hands-on workshop! You'll learn all about how CubeSats in space impact life on Earth, then form groups to build a RASCube CubeSat kit. You'll assemble the aluminium structure, built the internal electronics and put it all together. Once assembled, you'll see the live data from your CubeSat, and learn how you can use RASCube to help students see real-world applications to their learnings. Hosted by Edward Robinson, Founder of Robinson Aerospace Systems.

Target Audience: Design & Technologies (Years 7–12), Digital Technologies (Years 7–12), Mathematics (Years 7–12), Science (Years 7–12)

4.10 Tiny Homes, Big Thinking

Jordan Pokorny, Pembroke School

This workshop showcases a Tiny Home design unit where students use SketchUp to explore sustainability and creative problem-solving. Participants will get hands-on with SketchUp to design their own small-scale dwelling.

Target Audience: Design & Technologies (Years 7–12), Digital Technologies (Years 7–12)

Program correct as at 15 October 2025 but may be subject to change without notice.

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