From Spark to Solution

It Takes a Spark
Alcoa STEM Conference

WESTERN AUSTRALIA
Thursday, 24 September 2026

The conference will highlight how STEM learning and application focuses on developing future ready skills (communication, creativity, critical thinking, collaboration, community) leading to people being lifelong thinkers and problem solvers.

The It Takes a Spark! Alcoa Kwinana STEM Conference is UNIQUE as teachers and students learn together. The day is an inspiring and engaging programme designed for Year 4 to 10 students, and Teachers and Education Leaders.

The brightest educators, students and key organisations who are passionate about STEM will share their ideas, programs, and innovations that demonstrate STEM learning in action and develop people to be thinkers and problem solvers.

Why attend...

- Hear from experts in the STEM field
- Engage in innovative, **hands-on STEM** learning alongside your students
- Discover the latest developments, innovations, tips and tools in STEM from experts and practitioners.
- See live demonstrations and receive resources, tools and tips to implement back in the classroom
- Network and collaborate with other schools, educators and industry experts and get **insight into their STEM activities and programs**
- Earn professional development hours

Who the conference is for...

Year 4 to 10 students: those who are already (or aspire to be) STEM Leaders in your school OR those you wish to spark an interest in STEM
Teachers: those who have little experience and those who have a lot, looking to be inspired, participate in hands-on professional learning and network with peers
Heads of Learning Areas / Curriculum: who wish to elevate the teaching of future ready skills and disciplines
Principals and Deputy Principals: to witness what is possible by embedding STEM authentically in your school

Teacher Professional Development Stream

"Many teachers and schools are challenged by HOW to create STEM learning that develops students across the years to be the independent critical thinkers and problem solvers the world needs.
Sessions are designed to provide teachers with the insight, practical guidance and resources they need to improve their planning and practice upon return to their schools. The professional learning will support teachers no matter their prior background, confidence, or capability".

OUTSTANDING KEYNOTE SPEAKERS

DR HELEN MCFARLANE

Geologist and Superstar of STEM, CSIRO

The landscapes we see today were shaped by billions of years of geological events. The rocks under your feet hold clues about ancient volcanoes, shifting continents, and huge forces that have changed Earth over time. To really understand our planet, we need to understand these long-term processes and how they created the land we live on and the resources we use. Most importantly, we need this understanding to find the critical metals and materials needed to meet humanity's greatest challenge, climate change.
Dr Helen McFarlane is a geologist who studies rocks and landscapes across Australia and around the world. She looks at where different rocks appear on the surface and what their shapes look like deep below the ground. She combines information about minerals, rock chemistry, and geophysical data — which shows things like density and magnetism — to spot signs of ancient geological structures and faults that might contain valuable metals that are needed for the energy transition.
Helen earned her PhD in Geology from Monash University in Australia and the University of Toulouse in France. She is the Chair of Geoconferences, an organisation that promotes earth science education. She now leads the Multidimensional Geoscience group at CSIRO's Discovery Program.

KATHRYN LAURENTIS

Engineer and Superstar of STEM, University of Melbourne

Kathryn Laurentis is uncovering the hidden stories of women in engineering history; the inventors and trailblazing graduates who helped shape the modern world but were too often left out of the story. Through her postgrad research, Kathryn is bringing these engineers back into the spotlight and showing how engineering has always been about more than just gears and gadgets; it's been powered by creativity, courage, and collaboration.
With an early love of making and designing, Kathryn is a Chemical Engineer and Mathematician who has forged a career in natural resources. A born problem solver with a passion for thinking big, Kathryn has been involved in multi-million-dollar energy and mining projects, helped improve operations at sites around the world, and is passionate about developing natural resources responsibly as we move toward a cleaner energy future.
Outside work, Kathryn champions diversity in STEM. She leads a statewide network for women in sustainability, sits on boards for science and arts organisations, and advises museums on initiatives to share the incredible role engineers play in our world. She's a Fellow of Engineers Australia and an international marathon runner, the coolest of which was in Antarctica.

Contact

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Host School: Frederick Irwin Anglican School
Organiser: Intuyu Consulting
Platinum Sponsor: Alcoa




When we asked teachers how the 2025 event made a difference to your thinking or practice? This is what they told us...

- *It has given me a new perspective on design thinking and so many great ideas to introduce to my fellow teachers and students*
- *Confirming STEM connections in Maths*
- *New ideas for integrating sustainability*
- *Encouraged me to utilise skills from specialist into classroom curriculum learning*
- *I'd like to start 3D printing at our school after applying for a grant to get a 3D printer. I'm motivated to use Ozobots in our school and to make CD cars with classes*
- *It allows students to experience what is happening*
- *The AI session was incredible! I enjoyed the interactive sessions*
- *Making connections and building opportunity for future STEAM incursions in 2026*
- *Ignited the passion*
- *I really enjoyed the keynote*
- *Reviewing ways to integrate STEM across all subjects*
- *I have been really inspired by the VR session. I have learned how to use the VR in my class*
- *Greater understanding of more of the steps / process. Making greater connections to real life to make STEM useful and relevant*
- *I have found that seeing real life class practice has helped develop ideas and pedagogy*
- *Small things that can have a big difference. Using skills / things we have in innovative / engaging ways*

When we asked the students 'What has changed in your thinking about STEM now that you have attended this conference?' They told us...

- *I think that becoming an astrophysicist is a good idea and sounds cool*
- *Being curious, asking questions is ok because it gives you more knowledge*
- *Ideas can be outside of the usual and every person on a team has something to bring to a project*
- *I have always loved STEAM/ STEM but after meeting these people I found it great to know that other people also enjoy STEM!*
- *The plastics and how you can reuse nearly everything*
- *That we can pursue any career which we are passionate about*
- *I am now more positive about STEM*
- *It's a really good hands-on learning experience*
- *STEM is more than just maths and making things*
- *That we can pursue any career which we are passionate about*
- *A lot because I just thought was a learning program but I realised it is actually way more fun*
- *I changed my thinking with knowledge*
- *It's amazing!*
- *I think that there is more than meet the eye!*
- *I feel inspired*
- *How many things use STEAM in daily life*
- *That creativity is key*
- *It opened my eyes and made me think more positively about STEM*

Flow of the day....

*Listed program is subject to change

8.15am	Sign-in opens
8.45am	Master of Ceremonies - Welcome, set up for the day and housekeeping
9.00am	**KEYNOTE SPEAKER #1**
	ROTATION ONE - 45 minute session
9.40am	**DigiDesign Mini Workshops + Alcoa Kwinana STEAM Expo** o Preselected parallel selections o DigiDesign mini workshop sessions on a specific STEM topic o Hands-on Alcoa Kwinana STEAM Expo 5-15 min activity, moving between activities o For Year 4 to 10 students and teachers o Presented by STEM students / educators / universities / sponsors / organisations
9.40am	**Teacher only Mini-Master Classes** o Preselected parallel sessions o Hands-on masterclass on a STEM topic that will make a difference for teachers to enact in their school o Presented by STEM educators / universities / sponsors / organisations
10.30am	**MORNING TEA** - A quick break before moving to the next preselected workshops
	ROTATION TWO - 70 minute session
11.05am	**Problem Solver design challenge** o Preselected parallel sessions o Aimed at Year 4 to 10 students and teachers o This session involves real life design challenges where attendees are led through the design process to ideate and present possible solutions o Presented by STEM students / educators / universities / sponsors / organisations
11.05am	**Teacher only Mini-Master Classes - 70 minute session** o Preselected parallel sessions o Hands-on masterclass on a STEM topic that will make a difference for teachers to enact in their school o Presented by STEM educators / universities / sponsors / organisations
12.20pm	**LUNCH** - A light lunch included for students, teachers and presenters. An opportunity to network with other teachers and students.
12.55pm	**KEYNOTE SPEAKER #2**
	ROTATION THREE - 45 minute session
1.35pm	**DigiDesign Mini Workshops + Alcoa Kwinana STEAM Expo** o Preselected parallel selections o DigiDesign mini workshop sessions on a specific STEM topic o Hands-on Alcoa Kwinana STEAM Expo 5-15 min activity, moving between activities o For Year 4 to 10 students and teachers o Presented by STEM students / educators / universities / sponsors / organisations
1.35pm	**Teacher only Mini-Master Classes** o Preselected parallel sessions o Hands-on masterclass on a STEM topic that will make a difference for teachers to enact in their school o Presented by STEM educators / universities / sponsors / organisations
2.30pm	**WHERE TO NEXT, FEEDBACK AND CLOSE OF WA CONFERENCE** o Completion of feedback form o Prize draw for Teacher STEM Passport
2.45pm	**END OF THE CONFERENCE**

The Programme so far....

Teacher Mini-Master Class: Practical Professional Development

How to integrate Big Bang Cosmology and the Maths Behind It from Year 8

Einstein First, The University of Western Australia

Cosmology—the story of the Big Bang and the evolution of the Universe—explains how an early hot, dense plasma grew into the vast, structured cosmos we see today. Every student deserves access to this story, yet in many schools it is taught only in senior secondary classes.

This workshop will show how key cosmology concepts and essential mathematical ideas (large numbers, estimation, and scaling) can be introduced as early as Year 8 through engaging games and interactive tasks. The workshop will equip you with how to have students explore ideas such as cosmic expansion with a balloon-universe model, identify elemental "fingerprints" using spectra, and simulate galaxy clustering with a space–time simulator. With the right approach, cosmology becomes accessible, meaningful, and exciting for a wide range of learners including teachers!

Suitable for Secondary Teachers - 45 minute session

AI Lift-Off: Teaching AI skills in the classroom

WA Data Science Innovation Hub

To prepare young people to be future ready learners will require teachers to explicitly teach critical AI literacy such as fact-checking outputs, recognising potential biases in design and data, and understanding ethical implications.

In this hands-on workshop you will go into AI concepts and experience, via practical activities, how you can educate your students on AI while staying curriculum aligned. A range of materials will be provided for you to take the skills and lessons back to your classrooms..

Suitable for Secondary Teachers - 70 minute session *BYO internet enabled laptop

Pedagogical structures to equip students to be "Future Ready"

South Thornlie Primary and Southern River College

Are you frustrated with how to develop your students to collaborate, communicate, and be effective thinkers and learners at school? In a jam-packed curriculum, how can we ensure students develop the critical skills needed now and for their future?

In this teacher session we will share a practical, engaging framework that distils the future-ready skills into the 5 Cs: Collaboration, Communication, Creativity, Critical Thinking, and Community—the essential general capabilities students need to thrive within and beyond the classroom. We will also share a range of engaging activities that seamlessly integrate these skills into everyday lessons, giving you tangible ideas to bring them to life in your classes.

Suitable for Primary and Secondary Teachers - 45 minute session

Sustainability Innovation Challenge

STEM Punks

The Sustainability Innovation Challenge invites participants to tackle real-world problems using the UN Sustainable Development Goals and Design Thinking as a lens for purposeful, future-focused innovation.

In this dynamic, hands-on experience, learners build practical skills in micro:bit programming and explore how SMART Sensor Boards can measure and monitor environmental conditions to guide meaningful solutions. Each teacher will also receive an Innovation Learning Guide tailored to the all versions of the micro:bit, empowering them to continue experimenting, creating, and driving sustainable impact long after the conference ends. This is a great workshop to learn how to use the micro:bits you already have in new and innovative ways.

Suitable for Primary and Secondary Teachers - 70 minute session *BYO internet enabled laptop

Cosmic Crops: Plant Prototyping for Space

ARC Centre of Excellence in Plants for Space

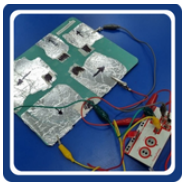
Join researchers and educators from the Plants for Space Centre for an immersive, hands-on workshop that draws on the science of growing food for space and places teachers in the role of learners.

At the heart of the workshop is a practical prototyping challenge that invites participants to test ideas, respond to feedback, and refine their thinking through inquiry and links directly to scientific investigations. The session will also provide insight into critical thinking pedagogy through the Plants for Space partnership and research project with the author of the Australian Curriculum's Critical Thinking strand.

Participants will leave with a strong understanding of how the Plants for Space resources align with curriculum and critical thinking pedagogies, and how they can be used to support student outcomes through engaging, authentic activities, lessons and units, inquiry projects, and disciplinary knowledge development.

Suitable for Primary and Secondary Teachers - 45 minute session

How to create authentic real-world projects for students



Gwynne Park Primary School

One of the challenges that many STEM teachers face is creating authentic real-world projects that address both the digital as well as the design and technologies curriculum. We know that authentic challenges can engage students and deepen critical and creative thinking as well as problem solving. In this hands-on session, you will explore how technologies like the Makey Makey can be used to develop student capacity to be empathetic, creative, problem solvers. Framed by the UN Sustainable Development Goals, you will build an adaptive game controller, learn practical troubleshooting strategies, and gain an authentic classroom-ready project that can be used across the curriculum.

Suitable for Primary Teachers - 45 minute session

Exploring the Moon with Australia's Rover - Roover

Victorian Space Science Education Centre

Imagine bringing the excitement of Australia's first lunar rover mission straight into your classroom. Through two hands-on, curriculum-aligned activities designed for Years 7–8 (with extensions for Years 9–10) by expert educators and practicing teachers, you'll experience stepping into the shoes of mission scientists and engineers, exploring how real lunar expeditions are planned — from choosing a landing site to navigating the rugged terrain of a crater.

Teachers will leave with practical strategies, ready-to-use resources, and a deeper understanding of how to design learning that mirrors genuine scientific and engineering practice. You'll build confidence in guiding students to analyse lunar surface features, apply evidence-based reasoning, weigh mission hazards, and justify decisions just as professionals do.

Suitable for Secondary Teachers - 45 minute session

Teacher Mini-Master Class: Practical Professional Development cont'd...

Making STEM simple and special

Grandis Primary School

One of the challenges for delivering STEM in primary schools, particularly in rural and regional areas, is how to create and deliver effective STEM learning given the tighter budgets, inadequate resources, lack of time and poor infrastructure.
In this workshop, teachers will explore how to integrate STEM skills and thinking into science and other STEM related subjects and how you can access and use low cost and free resources like Deadly Science, Einstein First and more to develop simple, practical learning activities that ignite student engagement and excitement.
Chris Lambe was awarded the WA "2025 Minister's Teacher of the Year' for his innovative teaching methods, including inquiry-based learning, STEM integration, and culturally responsive approaches that incorporate Indigenous knowledge.
Suitable for Primary Teachers - 45 minute session

The Blueprint Method - A practical guide to AI

John Curtin College of the Arts

Every AI workshop teaches better prompts. This session teaches something more valuable: capturing the consistent patterns in your practice as a reusable blueprint your AI reads once. Teachers already think this way — rubrics, templates, scope and sequence are all abstractions. Apply that discipline to AI. Because the best prompt is one you never have to write again.
Teachers will learn how to build and refine Blueprint files using computational thinking principles such as pattern recognition and abstraction, separating the stable "skills" from the specific context each task requires. They'll explore how to read AI responses critically, adjust prompts in the moment, and feed improvements back into their Blueprints so they evolve over time rather than locking in static outputs. Teachers will leave with a practical, repeatable process for creating Blueprints — from formatting guides to course syllabi to topic-specific knowledge — and a reusable library that saves time, strengthens accuracy, and supports long-term AI integration in their workflow.
Suitable for Secondary Teachers - 70 minute session *BYO internet enabled laptop

DigiDesign hands-on workshops - Student and/or Teacher

Big Bang Cosmology

Einstein First, The University of Western Australia

Cosmology—the story of the Big Bang and the evolution of the Universe—has been described as "the greatest story ever told." It explains how the Universe expanded from an extremely hot, dense plasma to the vast and structured cosmos we observe today. Every child deserves access to this story.
In this workshop, you will explore the mysteries of the Universe through simple, hands-on activities. You will engage with exciting questions such as: How many galaxies are there in the Universe? What did the early Universe look like? How can we read the "fingerprints" of stars?
Suitable for Year 7 to 10 students and/or teachers

Mission to Mars - Primary

Gilmore College

The idea of sending humans to Mars has been the subject of aerospace engineering and scientific studies since the late 1940s as part of the broader exploration of Mars. Much like the Apollo missions were the spark for a generation of scientists, mathematicians and engineers in the 1960's, the Mars missions will ignite a new generation of STEM thinkers and doers.
In this hands-on workshop, led by Gilmore GEMS students, you will rotate through four activities that will showcase various aspects of a Mission to Mars: 1) Arts and Design: Designing Mars habitats by creating living spaces for astronauts, 2) Coding CoDrone Edu drones for interplanetary flights, 3) Coding SPIKE Prime robots for autonomous transport tasks, and 4) Remote (virtual joystick) controlling JIMU robots to simulate Mars surface movement.
Come and learn about Space STEM from the GEMS!
Suitable for Year 4 to 6 students and/or teachers

Mission to Mars - Secondary

Gilmore College

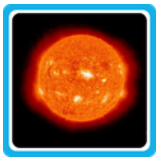
The idea of sending humans to Mars has been the subject of intensive aerospace engineering and scientific study since the late 1940s, and just as the Apollo missions ignited a generation of innovators in the 1960s, the upcoming Mars missions are set to inspire a new era of STEM thinkers and doers.
In this hands-on workshop, you will join the Gilmore GEMS for a Mission to Mars, designed for secondary students ready to tackle advanced coding and complex mission objectives. Participants will rotate through four activities, that will showcase various aspects of a Mission to Mars: 1) Arts and Design to engineer sustainable living spaces for astronauts before moving into the technical realm of interplanetary flight. 2) Coding CoDrone Edu using Block or Python in both single and swarm flight modes, 3) Program SPIKE Prime robots to execute autonomous transport tasks on the Martian surface, and 4) Remote operations by simulating surface movement with JIMU robots via virtual joysticks.
Come and learn about Space STEM from the GEMS!
Suitable for Year 7 to 10 students and/or teachers

CSI Spark: Forensic science

Tangerine STEM

Forensic science integrates the four core disciplines: science (biology, chemistry), technology (digital forensics, AI), engineering (equipment design), and mathematics (statistical analysis of DNA and patterns).
In this workshop you will take on the role of forensic science teams, analyse evidence and work with other teams to solve a crime. We'll get hands on with microscopes, test mystery substances, find out how DNA is analysed, and look for clues that criminals might leave behind.
Suitable for Year 4 to 8 students and/or teachers

Sunspots and the Spectrum of Light



Perth Observatory

The Sun emits energy across the entire electromagnetic spectrum, but its peak emission is in the visible range, around 500 nanometers (green-yellow light), which is why sunlight appears yellow-white. Sunspots are temporary, dark regions on the Sun's photosphere caused by intense magnetic activity.
In this workshop you will see the different spectrums of various gases and then investigate how prisms separate white light into the spectrum of colour. You will also have the opportunity (depending on the weather) of using sunspotters to see the sunspots on the sun.
Suitable for Year 4 to 6 students and/or teachers

DigiDesign hands-on workshops - Student and/or Teacher cont'd...

Moving from Lego League to Tech Challenge Robots

Peter Carnley Anglican Community School

While FIRST LEGO League introduces you to real world problem solving using a guided robotics program, FIRST Tech Challenge develops you to think like engineers and be future ready learners.

This workshop gives you a welcoming introduction to moving from FLL to FTC robotics. With help from PCACS students, you'll get a close look at the robots, try some guided hands-on activities, and hear what FTC is really like. We'll chat about the arena, team folios, kit costs, and the WA competition—plus share how our school runs FTC and how your school can get involved.

Suitable for Year 7 to 10 students and/or teachers

From Fast Fashion to Fantastic Bags: Design for Sustainability

Peter Carnley Anglican Community School

Fast fashion is a term used to describe the clothing industry's model of mass-producing clothes at low cost with high-speed turnaround times to replicate the latest streetwear and fashion trends. Not only does the fashion industry produce about 10 percent of annual global carbon emissions, the throwaways fill up our rubbish tips.

In this hands-on workshop you will actively participate in a guided design-and-make challenge to upcycle a T-shirt into a functional reusable bag. You will measure, cut, design and construct your product, making decisions about size, durability and usability. You will also reflect on sustainability and how your design contributes to reducing textile waste.

Suitable for Year 4 to 10 students and/or teachers

Digital Escape Room

Peter Carnley Anglican Community School

Have you ever watched those murder mystery TV shows and solved who did it before the character in the show? Have you ever gone to an escape room and actually escaped?

In this interactive whodunnit digital escape room workshop you will be the ones solving the mystery. You will complete a live digital escape room on your device, supported by experienced student leaders, and use your subject content, logic, and problem-solving skills to solve the mystery.

Teachers will not only participate but learn how to design and build curriculum-based escape rooms. A great way to integrate engaging mystery challenges in everyday learning!

Suitable for Year 4 to 7 students and/or teachers

AI Lift-Off: Make a Model

WA Data Science Innovation Hub

For you to be prepared for the future of AI you will need to learn the strengths and challenges of using artificial intelligence for tasks. For example, AI is not neutral but contains embedded human biases and historical data that can lead to inaccuracies or "hallucinations".

In this hands-on workshop we will explore AI fundamentals by looking at an AI model (Teachable Machine) and what's inside it. We explore how data affects AI and its decision making, and then we work in groups to learn experimentally what type of data you need, how much, etc, to make an accurate AI model.

Suitable for Year 4 to 7 students and/or teachers

AI Lift-Off: Code an AI

WA Data Science Innovation Hub

You know quite a bit about AI but are wondering what the next step is?

In this workshop you will explore the AI & Digital technologies skills you need to develop by creating programs powered by AI on a specialised coding platform. You can use either Blockly style programming or Python depending on your skills. You will have the opportunity to create a small AI program which addresses some real-world problem (e.g a 'fake news detector', 'study materials gamifier', or a 'text & font simplifier' for dyslexic students)

Suitable for Year 7 to 10 students and/or teachers

Can AI Teach You a Language?

Young Engineers Australia WA

AI can be useful for learning a language as it can offer personalised feedback on grammar, pronunciation, and vocabulary in real-time. Unlike static textbooks, these tools adapt to your pace and specific weaknesses, adjusting lesson difficulty and suggesting relevant content to optimize your learning path.

In this workshop you will explore how AI can support language learning through interactive challenges. You will learn simple words, test AI-generated responses, and identify mistakes. The workshop builds understanding of AI, pattern recognition, and critical thinking through hands-on activities and a short interactive quiz.

Suitable for Year 4 to 10 students and/or teachers

The Finch Spark!

Frederick Irwin Primary School

The Finch Robot 2.0 brings computer science and learning to life by providing you with a hands-on representation of your code. You can learn coding by programming the robot's embedded lights, sensors, and motors in a variety of programming languages.

In this hands-on session you will work in small teams and rotate through a range of stations where you will learn how maths and programming can be harnessed together to solve real world problems. Can you beat all the Finch challenges?

Suitable for Year 4 to 6 students and/or teachers

Designing safe and inclusive urban spaces

Institute of Public Works Engineering Australasia – WA

Urban mobility is more than just moving people—it's about creating safe, inclusive, and engaging spaces that support active transport and community wellbeing.

In this interactive session, you will work in teams to design a Safe Active Street using real-world constraints and creative freedom. Each team's design will be tested using a remote-controlled vehicle to simulate traffic flow and assess effectiveness. This is a great workshop to discover how urban designers and engineers create more efficient, people-centred, and resilient city environments.

Suitable for Year 7 to 10 students and/or teachers

Exploring Animal Adaptations - the STEM Way

Greenfields Primary School

Every living thing is basically a survival expert. Over generations, they develop awesome built-in features – like super senses, clever camouflage, or extreme toughness – that help them stay alive and have offspring.

In this workshop, run by the students of Greenfields Primary, you will explore how animals adapt to survive in environments through online lessons, interactive games, and hands-on STEM activities such as the construction of an animal with a particular adaptation.

Suitable for Year 4 to 6 students and/or teachers

DigiDesign hands-on workshops - Student and/or Teacher cont'd...

Little Farms, Big Ideas: A Seed to a Harvest

Students from Northam Senior High School
The agricultural farming industry is one of the biggest industries in Western Australia. It contributes over $11 billion to the state's production value and directly employs over 36,700 people.
In this hands-on AgTech workshop you will learn to be a farmer. You will be creating your own mini-Western Australian farms which you can bring home. You will map out soil layouts using tractors, plant local crops (wheat, lupin, canola), and apply precision farming science. Along the way we will explore the critical STEM behind agriculture, investigating seed biology, data analytics, and sustainable resource management.
Suitable for Year 6 to 8 students and/or teachers

Young Inventors: Designing Smart Home Solutions with Micro:bit

Students from Leda Primary School
Smart homes are homes equipped with Internet of Things (IoT) devices that connect to a central hub or app, enabling remote control, automation, and real-time monitoring of systems like lighting, climate, and security.
In this hands-on workshop, join Leda Primary's Year 6 students as they showcase how they used smart technologies to design solutions that make homes safer, smarter and more efficient. You will have the opportunity to create and test a smart night light and a smart burglar alarm using micro:bits while discovering how sensors and coding can be used to solve real-world problems.
Suitable for Year 4 to 6 students and/or teachers

Grid Grand Prix

Students from Northam Senior High School
Spatial reasoning is crucial in any STEM discipline. It is, for example, the ability that the engineer needs to build bridges; the chemist to see the 3D structure of a molecule; and the race car driver to get the best time on an unfamiliar race circuit.
In this hands-on workshop, you will work in groups of 4 to race a remote-control car through a grid maze following a list of spatial mathematics rules. Can you reach the end balloon with a prize inside and pop the balloon before the other groups do?
Suitable for Year 7 to 10 students and/or teachers

The Ore-some Challenge

Hancock Iron Ore
Ready to strike it rich? Take on The Ore-some Challenge and step into the safety boots of a miner in this STEM workshop.
Your mission is to mine valuable ore, avoid costly mistakes and maximise your profit. But there's a catch — the biggest rewards don't always come from the most obvious choices. You'll need to balance trade-offs, think about engineering, safety and environmental protections, and optimise your plan for the best result. It's a fun, hands-on way to build your problem-solving and real-world decision-making skills.
Suitable for Year 8 to 10 students and/or teachers

The Science of Bubbles

Grandis Primary School
Bubbles! We have all had fun blowing and chasing bubbles with our friends. But did you know that there is a lot of cool science behind why bubbles exist? In this hands-on workshop you will learn about the science of bubbles including elasticity, surface tension, chemistry, light, and even geometry
Suitable for Year 4 to 6 students and/or teachers

Capillary action - Plants know how to do it!

South Metro TAFE
Capillary action is the process of a liquid flowing in a narrow space without the assistance of external forces like gravity. Leonardo da Vinci first noticed this strange behaviour, and today we know it's one of the secret superpowers that helps plants stay alive.
In this workshop, you will get hands-on with two fun experiments: the classic walking-rainbow activity and a plant-xylem water-uptake demo. By watching coloured water travel through paper towels and plant stems, you'll see capillary action in action—literally. By the end, you'll understand not just the science behind it, but why this tiny force plays a huge role in keeping Earth's ecosystems thriving.
Suitable for Year 7 to 10 students and/or teachers

Scitech's Foley Challenge: Soundtrack the Scene

Scitech Discovery Centre
Lights off, sound on! In sound design, Foley is the reproduction of everyday sound effects that are added to films, videos, and other media in post-production to enhance audio quality (e.g. footsteps, clothing rustles, squishy movements, etc)
Work alongside your team to turn a silent clip into a cinematic experience, by using everyday items to build moments of action, suspense and atmosphere. Create, experiment and record your audio masterpiece to playback at the end of the workshop.
Suitable for Year 7 to 10 students and/or teachers

STEM Expo: hands-on activities area - Teacher and Student (running parallel to DigiDesign workshops)

The Alcoa Exploration Lab

Alcoa
The Alcoa Exploration Lab invites you to explore modern mining science through hands-on activities. Meet our robotic dog used in industry operations, separate edible "dirt" into different size fractions like mineral processing experts, and use infrared cameras to uncover the hidden world of heat and energy transfer.

Mars AI Rover and AI SMART Home Demonstrations

STEM Punks
At the STEM Punks Expo stand, you'll discover how micro:bit-based Mars Rovers and SMART Homes can be integrated with AI to perform real-world tasks. Students and teachers are invited to get hands-on with interactive kits and tackle challenge-based activities using our AI Machine Learning Tool and IoT Dashboard. Come explore the exciting possibilities of coding, robotics, and AI—all in one fun, educational experience!

SailLAB – Australian Sailing STEM Education

Australian Sailing
SailLAB is an interactive, STEM-focused program designed to engage students with the science and technology behind modern sailing. Through hands-on activities, participants explore concepts like wind dynamics, hydrofoils, boat design, and sustainability, while learning about cutting-edge events such as the America's Cup and SailGP.
In this hands-on expo activity, you will explore how to operate a radio-controlled yacht, learn about hydrofoils and hydraulics, and discover the history of the America's Cup, with a focus on recent technological advancements and innovations featured in the Sail GP.

VR Stellar Safari: Experience the Universe!

Perth Observatory
Auroras are directly caused by the interaction between Earth's magnetic field and charged particles from the solar wind. When these particles reach Earth, they are guided along magnetic field lines toward the polar regions to create an aurora. Embark on a thrilling VR journey to experience the aurora around Earth. You will also be able to explore how magnetic fields work using magnets and iron filings and then recreate an aurora on paper as an art piece.

Be Digitally Future Ready!

South Metropolitan TAFE
With continuous technological advancements, the IT world is constantly expanding and evolving. South Metropolitan TAFE offers a wide range of Information Technology training pathways from entry level courses through to diplomas and advanced diplomas that can prepare you for direct entry into the workforce, or further study at university.
In this Expo we will show you a range of creative and technical activities taught in the TAFE IT courses including

- Live cyber-attacks happening around the world.
- Examples of games created by students.
- Examples of content Vibe coded with AI

Come along and have a chat!

Throw, Track, Triumph: Exploring Chance with Micro:bit Motion Data

CSER STEM, University of Adelaide
Wearable technology is increasingly being used in elite sport to support athletes to improve their capabilities.
In this activity, you will attach a Micro:bit to your arm and throw bean bags into a bucket. Throw strength is calculated by measuring acceleration along three axes. The Micro:bit plays a sound when the target throw strength is achieved. This is a wonderfully simple chance experiment teaching you about data logging and analysis using a Micro:bit.

Plastic Recycling in Action: From Waste to Useful Products

Peter Carnley Anglican Community School
Plastic recycling is often seen as complex and industrial, but it can be adapted for use in a school setting. At our Expo table, you will see how a plastic shredder and extruder are used to turn discarded plastic into functional items such as carabiners. Our students will demonstrate how different types of plastics can be repurposed, share how we use Precious Plastic machines in the classroom, and provide an insight into how this process can fit into a school environment.

Becoming future ready with VEX Robotics!

Amaroo Primary School
Robotics develops future-ready skills by transforming abstract classroom concepts into tangible, hands-on experiences that foster essential 21st-century skills such as critical thinking, adaptability, and collaboration.
In this Expo session, the students from Amaroo Primary will support you to develop your future ready skills as you drive ready-made robots through the arena. You can even try your hand at improving your STEM skills when building a robot using Vex IQ Robotics.

Bora Beetle Detective Agency

Perth College
The Polyphagous shot-hole borer is a small beetle that tunnels into the trunks, stems and branches of trees and plants. This beetle is highly invasive and attacks a wide range of plant species, with over 500 documented globally to have been affected.
In this expo we're gamifying biosecurity to protect WA's trees! Explore our student-designed website and app, featuring a "Pokémon-style" map to track the invasive Polyphagous Shot-Hole Borer. Experience how reporting real outbreaks through citizen science empowers communities to save our precious urban canopy.

Melting Metal Mementos

Mark Baker, Assumption College, Warwick Queensland
When we think of something being a metal we often think of copper, gold, silver, iron and steel. These metals are known to be quite strong, have high melting points and are used in a variety of construction, technology and jewellery. However not all metals have high melting points and can be quite beautiful in a crystalline form.
In this STEAM expo, you will discover how Science and Art can merge to create exotic jewellery. Come along and see non-toxic bismuth metal melt and then make your own bismuth rainbow crystals to grow on an earring.

STEM in the Navy

Submarine Recruiting
As advances in technology impact all of our lives, new jobs and new careers are emerging to keep up with the rapidity of change. The Australian Defence Force is leading the way in embracing these new technologies. STEM is more than a collection of subjects; it is a way of thinking – asking questions, considering data and evidence, and being curious.
In this hands-on Expo from the Submarine Recruiting Mentoring & Development team, you will be able to look on board a Collins & SSN Virginia Class submarine using our VR headsets, and participate in some STEM activities using principles we employ daily in the Submarine Force.

Girls+ in Engineering

Girls+ in Engineering, UWA
The UWA Girls+ in Engineering program seeks to address the gender imbalance in STEM fields beginning at an early age, through the program's three core aims:

- Demystify what engineering means
- Challenge stereotypes of women in STEM fields
- Increase female enrolments in STEM across Western Australia

This Expo activity will spark important conversations about how stereotypes can influence your attitudes towards STEM. Join us and learn about how your hobbies and interests might relate to different fields of engineering. Also, participate in a short science experiment that demonstrates the concept of biomimicry and brainstorm how this technology could be utilised in society.

STEM Marine and Racing

STEM WA
Remotely operated vehicles are underwater machines that are often used to explore the ocean depth while being operated by people at the surface. They are used to perform underwater observation, inspection, and physical tasks such as valve operations, hydraulic functions, and other general tasks within the subsea oil and gas industry, military, scientific and other applications.
In this hands-on expo session, you will have the opportunity to operate a mini-ROV around obstacles and learn about the STEM Marine and Racing programs that STEM WA supports in WA Schools.

Smartphones and You

School of Psychological Science, UWA
There is a growing body of research that smartphone use weakens your attention span and impairs your ability to think - just through its mere presence.
In this expo you will be invited to participate in a live demonstration to explore how your smartphone use relates to your attention. You will measure your attention ability using common psychometric measures of attention and complete a smartphone use questionnaire. Let's find out how using smartphones affects you.

Ask, Explore, Grow: Plants for Space

ARC Centre of Excellence in Plants for Space, UWA
ARC Centre of Excellence in Plants for Space aims to create on-demand, zero-waste, high-efficiency plants and plant products to address grand challenges in sustainability for Space and on Earth.
In this interactive Expo you can:

- can question our AI bot PIA on space related questions
- explore why microgravity in space is "Gaslighting" plant root growth
- investigate plant cells under microscopes
- discover how different light colours influence plant growth
- discover why sensory perception is important for astronaut health, and

quiz working scientists about Plants for Space research and STEM careers.

Robots to the rescue: How robots assist during a chemical spill

Al-Ameen College
This year, a team of Year 9 Robotics Al-Ameen College students took on the RoboCup Junior Australia Rescue Line challenge. This challenge required them to design and program a robot to navigate a winding line through a series of tiles to reach a rescue area, overcoming challenges such as obstacles, bridges, and shortcut opportunities along the way. Once the robot arrived at a green chemical spill zone, it then had to quickly locate and push the "victim" to safety before time ran out.
Come along and join our team to learn about how they approached the challenge, the principles they learned throughout the process, and take part in completing code to program the robots to overcome some of the Rescue Line challenges.

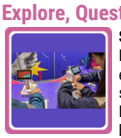
Local to Global: Exploring our Environment

Murdoch University Environmental Science Association
Consumerism is the primary driver of global waste generation with a "take-make-dispose" economic model that drives endless consumption over sustainability.
In this hands-on expo, join the team from MUEnSA to play a series of mini-games which highlight your global and regional environmental knowledge and sustainability practices. Can you place items in the correct waste bin receptacles? Can you identify which items are natural or man-made in a beach diorama? Can you match animals to their origins? Learn about your environment and sustainability in a fun way!

Travelling Back in Time with WA Organic and Isotope Geochemistry Centre

WA Organic and Isotope Geochemistry Centre– Curtin University
The WA Organic and Isotope Geochemistry Centre at Curtin University is a world research leader in the study of long extinct animals, prehistoric ecosystems, microbial life, the effect of microplastics on the environment and much more!
Visit the WA-OIGC expo booth where you can learn all about ancient life and paleoenvironments. With fossil samples that are hundreds of millions of years old and samples from the crater of the dinosaur killing asteroid, there are plenty of things to have a look at.

Explore, Question and Discover with Scitech



Scitech Discovery Centre
For the past 30 years, Scitech has offered engaging and inspiring learning experiences – fostering lifelong curiosity and positive attitudes towards STEM skills.
Drop in and explore a dynamic expo experience with hands-on activities and mind-bending demonstrations led by Scitech's Science Communicators. Test your instincts by spotting fakes with technology, tackle science's trickiest grey-area questions and experience demonstrations that challenge the way you think.
Teachers can also connect with Scitech staff to discover further opportunities for classroom engagement.

Being future ready with STEM Careers

South Metro TAFE
South Metro TAFE provides a range of fee-free and low-fee courses designed to help students gain job-ready skills in sectors such as science and the environment, construction, healthcare, defence, and technology.
In this Expo activity, you will have the opportunity to participate in games while finding out about TAFE offerings

- Lab Memory: use your memory to identify the order of common lab glassware and small equipment
- Guess the Seed: match the seeds in the Petri dishes with the plants that produce them

STEM career interactive engagement quizzes/game

Problem Solvers Design Challenge - Student and/or Teacher

Each session has a different real life design or STEAM challenge to solve aimed at Year 4 to 10 students and teachers. You will be posed with a real life design challenge and lead through the design process to ideate and present possible solutions.

Alcoa Sky Scouts: Drones for Forest Rehabilitation

Alcoa

Mine rehabilitation is the process of repairing land and water disturbed by mining activities to establish a safe, stable, and sustainable environment capable of supporting post-mining land uses.

In this hands-on challenge you will explore how Alcoa uses drones to deliver seedlings to hard-to-reach rehabilitation areas. Working together in teams, you will learn about the difficulties of planting a forest by hand and design and build smarter ways to transport and plant thousands of seedlings more efficiently.

Suitable for Year 7 to 10 students and/or teachers

AI Vibe Coding: Build a Game with ChatGPT

South Metropolitan TAFE

AI coding is transforming software development, not replacing programmers. By 2030, AI is expected to handle 60–70% of routine coding tasks, freeing developers to focus on higher-value work like system architecture, business logic, and innovation.

In this interactive session, you will use ChatGPT to help build a simple browser-based game by describing your ideas in plain English. No prior coding experience is needed, and you can leave with a working game you can take home, while learning about creativity, problem-solving, and AI.

Suitable for Year 7 to 10 students and/or teachers

Autonomous Vehicles Challenge

STEM Punks

Imagine a world where cars drive themselves, reducing accidents and traffic congestion. This “dream” future isn’t as far away as we think!

In this hands-on workshop you will learn about designing and programming vehicles that navigate independently while solving real-world problems as you go. This is a fabulous session for teachers to witness how STEM Punks Autonomous Vehicles challenge can foster innovation, creativity, and teamwork, and prepare future change-makers to address challenges in autonomous systems and smart technologies.

Suitable for Year 5 to 10 students and/or teachers

Sculpting Solutions

South Metro Primary Extension and Challenge

Sculptures are widely used as powerful tools to raise awareness for social, environmental, and health causes by transforming public spaces into platforms for dialogue and empathy.

Using Sculptures by the Sea, the world's largest free public sculpture exhibition held during March in Cottesloe, as inspiration and the Solution Fluency framework, you will design and model a sculpture that brings awareness to a current global issue or urgent contemporary Australian issue such as coastal erosion, plastic pollution, bushfires, water security, biodiversity loss, mental health, sustainable cities... provoking thought, discussion and action. This hands-on design challenge immerses both students and teachers in addressing a real-world problem through creative STEM thinking and can be replicated back in your schools.

Suitable for Year 4 to 8 students and/or teachers

Solving real-world industry challenges

The Chamber of Minerals & Energy of WA

In WA, industry is increasingly using automation to address real-world challenges that they face in remote and regional areas. This could include Automated Guided Vehicles (AGVs), robots, systems for irrigation and farm control, and ensuring safety for people and infrastructure.

In this hands-on workshop you will work in teams to respond to a real-world challenge industry faces in a remote environment. Using your problem solving, prototyping and collaboration skills, you will work out the most effective solution. For teachers, this session will show how you can implement scalable, classroom-ready digital technologies programs in your school and link learning to future career pathways.

Suitable for Year 4 to 10 students and/or teachers

Bees, Drones and the Future of Food

Al-Ameen College

Imagine a future where bees are disappearing. Without pollination, food supply and ecosystems are at risk. Technologies like drones can assist with pollination, crop monitoring and data collection.

In this workshop, you will work in teams to plan and program flight paths across a simulated agricultural environment, completing various missions using drones. Along the way you will explore how technology can support farming and the environment while recognising its limitations. Teachers are welcome to participate to find out how you can run this type of authentic learning in your school.

Suitable for Year 4 to 6 students and/or teachers

Exploring the Moon with Australia's Rover - Roover

Victorian Space Science Education Centre

Have you ever wondered how an Australian led lunar rover mission is planned?

In this hands-on workshop, you will step into the role of mission engineers preparing Australia’s first lunar rover for exploration. After a quick dive into how real rover missions are planned, you will use computational thinking and mathematics to optimise a rover mission route through a lunar crater. Working like real engineers, you will analyse terrain, weigh risks, test strategies, and justify your final route. Get a taste of the real decision-making behind Australia’s future in space.

Attending teachers will leave with practical strategies, ready-to-use resources, and a deeper understanding of how to design learning that mirrors genuine scientific and engineering practice.

Suitable for Year 7 to 10 students and/or teachers

The STEM Energy Game

Woodside Energy Ltd

Climate change is one of the largest challenges countries and all of us face as we progress through this century. Different states and countries use a variety of energy sources (coal, gas, solar, wind, hydro, nuclear, tidal, etc) to make up their energy mix. As we move into the future and want to avoid irreversible climate change, these energy mixes need to change to lower greenhouse gas emissions, but at the same time supply the ever-increasing demand for power.

In this problem solver session, you will participate in a game that shows how an energy mix can vary from 2026 to 2050, based on choices your team makes, events which happen and a bit of luck. Teams will play as different states or countries and discover how the complexities of building new energy, removing others, and transitioning in-between changes over time as technology evolves and ending contracts gets cheaper.

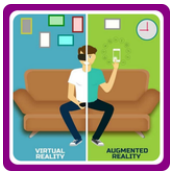
To win the game you have to follow the rules, spend your money wisely and focus on three areas:

1.Reduce the carbon intensity of your electricity grid

2.Grow the electricity grid in line with the goal your team receives in 2025

3.Ensure your energy mix meets minimum requirements your team receives in 2050

Suitable for Year 7 to 10 students and/or teachers



Virtual and Augmented Reality

Dale Christian School

Virtual and Augmented reality (VR / AR) is increasingly being used in construction, agriculture, mining, tourism, and even learning. With VR we can do site visits to historical places and hard to reach areas, see designs in 3D before they are built, support surgery, and much more. AR is used to improve manufacturing, guide and inform tourists, assist in healthcare, and much more.

In this workshop you will be introduced to the wide range of employment opportunities and uses associated with VR and AR. You will have the opportunity to interact with environments created by professionals and other students using Delightex before having a go at creating your own VR environment!

Suitable for Year 4 to 8 students and/or teachers

Wind to Water

Students from Northam Senior High School

Windmills have long served as a critical, renewable technology for agriculture by providing mechanical power to pump water from underground aquifers, dams, and wells without relying on fossil fuels or grid electricity. This system allowed farmers to provide consistent drinking water for livestock and irrigate crops in arid regions.

In this hands-on workshop, come and learn about how wind is able to keep food on the table and how to build a windmill to pump water. The workshop offers a bridge between creating, agriculture and food.

Suitable for Year 4 to 6 students and/or teachers

Design a Plant for a Moon Garden

ARC Centre of Excellence in Plants for Space, UWA

If humanity is going to be exploring the universe, then we will need to reimagine plants, food, and farming. For example, what sort of plants can survive the hostile environmental conditions on the moon with its extreme temperature fluctuations and high levels of cosmic and solar radiation?

In this design sprint session, you will work in teams to design a new plant by looking at the nutritional values of different plants and the plants' DNA. You will explore what people need to live off-Earth and present ways plants, technology, and creative problem-solving can support life on the Moon. This is a great session for teachers to learn how to run short design sprints!

Suitable for Year 7 to 10 students and/or teachers

Where Does CO_2 Go? Exploring Climate Change and Carbon Capture

CSIRO

For industries such as cement, steel, and chemical manufacturing, carbon emissions cannot be easily eliminated through renewable energy alone. In these situations, industry needs to explore Carbon Capture technology.

In this workshop you will investigate how carbon dioxide drives climate change and explore ways to remove it. Through hands-on experiments (CO_2 generation, ocean acidification, chemical capture, and engineering design), you will follow the journey of CO_2 and design your own solutions to make an eco-friendlier city.

Suitable for Year 4 to 8 students and/or teachers

Where the wind blows!

Engineers Without Borders – Curtin Chapter

The supply of reliable, efficient and affordable renewable energy is an immense challenge facing current and future generations. One of the possible solutions to sustainably and reliably powering the world is using wind energy. Wind turbines are structures that convert wind power into rotational energy by means of vanes called sails or blades.

In this design challenge you will work in teams to design, build and test your own set of mini-wind turbine blades to make the most efficient and effective design possible. Along the way you will learn about engineering, sustainability and how to apply critical thinking to real-world problems.

Suitable for Year 4 to 8 students and/or teachers

Using Lego to Prototype & Test a new Bridge

E^2 Young Engineers Australia

Designing a bridge is not for the faint-hearted – it has life & death implications. The WA government is exploring a proposal to build a new pedestrian & cyclist bridge across the Mandurah Estuary. This is to make it safer for all road users but it does have environmental and other implications.

You are part of the design team investigating and evaluating various design ideas. You have your teammates, a tray of Lego and your brilliant self to prototype and test the various design ideas.

Suitable for Year 4 to 8 students and/or teachers

The Logistics...

Further information

- In 2026 the It Takes a Spark STEM Conferences are being held in Queensland, Victoria and Western Australia.
- FAQ's, Impact, Media and News appearances can be found on our website.

Registration

- Early bird registration is recommended ends **14/08/2026 or sooner if sold out**
- Book Now or Hold places: **you can** hold early-bird places whilst you gain approval. Complete the Registration form and select 'hold place'.

Cost

- **Educator / Teacher:** Early bird $205.00 (Regular $245.00)
- Teacher presenter: complimentary*
- Pre-service, Aide/Support staff, Homeschool educator: Early bird $79.00 (Regular $99.00)
- **Student:** Early bird $30.00 (Regular $37.50)
- Student presenter: $27.50*

*>> Student Scholarship may be available upon application**

>> Morning tea and Lunch included for students and teachers.

Professional Development Certificate for Educators
Teachers can attend without students.
Students must attend with their teachers.
All attendees to register
Excursion pack available

Venue: Frederick Irwin Anglican School
36-66 Gordon Rd Mandurah WA 6210
Date: Thursday, 24 September 2026
Time: 8.15am open
8.45am start – 2.45pm finish

Thank you to our Sponsors & Supporters

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