QUEENSLAND

It Takes a Spark!
STEM Conference

Friday, 20 June 2025

Dream, Discover, Do!

The theme for Queensland's conference highlights how STEAM is dynamic and fun, and empowers and develops people to dream and shape the future.

The It Takes a Spark! STEM Conference inspires and engages forward thinking Year 4 to 10 students, teachers and leaders in STEAM.

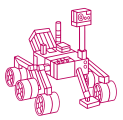
This vibrant **full-day** of learning, connection, excitement, and imagination begins at 8.45am. Hear from two inspiring keynote speakers, participate in three rotations across the day including DigiDesign hands-on workshops, STEAM Expo activities, Problem Solver design challenge workshops, plus teacher professional learning stream. The day ends at 2.45pm with morning tea and lunch included.

Teacher Professional Development from leading STEM experts on topics as diverse as:

- Sustainability Innovation Challenge
- Creating Impactful STEM Programs with a Digital Technologies Approach
- Introduction to the BBC Micro:bit
- Arduino in AgTech
- Integrating Enterprise Skills in the Classroom

Hands-on workshops for students and teachers, examples...

- Scribbly Gum STEAM
- Pathology in Practice
- Moving and Grooving with Granny: Creating digital solutions to help our elderly exercise
- Hidden Wonders: Science Under the Microscope
- Batteryless Wearable Health and Fitness Monitoring
- Autonomous Vehicles Challenge
- Virtual Pet
- Cut Waste and FEAST Fabulously!
- Designing Safe Habitats to survive climate change
- Can we actually defy Gravity?
- Mathematics, Geometry and Tessellations
- STEAM EXPO activities
  - *Make the invisible visible
  - *Highly autonomous robots assisting humans
  - *Curriculum aligned virtual reality
  - *Build your own habitat with Augmented Reality
  - *Explore Electronics!
  - *Mars AI Rover and AI SMART Home Demonstrations
  - *Unleash Your Sustainability Superpowers!
  - *MagLev Technology



Problem Solver sessions: design challenges taking students and teachers through the design process including...

- Data to Action: Innovating Climate Solutions for a Safer Future
- FUN with LEGO Robotics – Polar Bear Challenge
- The Power of Design Thinking
- Creating a healthy food future
- AI-Powered Waste Classifier
- Being Real World Problem Solvers with Citizen Science
- Beating the Bee Bug

...and many more

Outstanding Keynote Speakers

BRETT SALAKAS

Hewlett Packard Education

Brett Salakas, the Hewlett Packard Education Ambassador, is an international keynote speaker, an author, the founder of #aussieED (the largest online network of teachers in Australia), and the co-founder of both the ED Poets Society and #TheWalkingED.
Brett is a Primary School teacher and experienced leader who, over the past 20 years, has taught in South East Asia and Australia. He is passionately committed to turning educational theory into real classroom practice. Brett is all about connection, collaboration and inspiration.

DR TATHEER ZAHRA

Composite Materials Engineer and Superstar of STEM
Queensland University of Technology

Dr Tatheer Zahra is an engineer and academic focusing on creating high performance materials for disaster resilience of buildings to protect them from earthquakes, storms, explosions and collisions. Her research is inspired from various concepts ranging from Lego to memory foams used in shoes which have been redesigned for building damage protection applications.
Dr Tatheer works with some major industry partners including Concrete Masonry Association Australia, Adbri Masonry and Brickworks to innovate masonry with mortarless interlocking blocks based on Lego design. She also works with recycled materials industries to develop concrete from recycled materials such as rubber tyre chips and demolished concrete aggregates. The most satisfying part of her work is when young engineers are inspired by her work and offer to help in her research.

Contact

Rachel Manneke-Jones
Registration, Booking, Questions
P: 0411 270 277
E: rachel @spark-educonferences.com.au
W: spark-educonferences.com.au

Host School
Islamic College of Brisbane
45 Acacia Rd
Karawatha QLD 4117

Conference Coordinator
Intuyu Consulting
Dr Adrian Bertolini
E I adrian@spark-educonferences.com.au

Register: spark-educonferences.com.au/queensland-spark-2025/

Arduino in AgTech

IntegratedSTEM
AgTech development and adoption is key to the profitability and responsiveness of Queensland's agriculture supply chain. To keep pace in the changing climate, social, and economic environment, transformational approaches are needed for the agriculture sector to continue to meet the world's needs.
This workshop will showcase how students can use Arduino to automate or gather data from systems to inform decisions that lead to better farming practices that enhance yield and reduce production costs. These projects will demonstrate how AgTech can be effectively incorporated into the Grade 4 to12 classrooms by teachers of any level of technology skills. Teachers will be shown how to engage students in real-world problems by sharing practical strategies and resources that IntegratedSTEM has developed teaching AgTech-focused education to thousands of students across Australia.
Suitable for Primary & Secondary Teachers *recommended to BYO laptop or Mobile

IIntroduction to the BBC Micro:bit

Damien Kee
The BBC Micro:bit is a small and inexpensive programmable minicomputer that your students can use to code a variety of projects such as games and wearable technology. There is no fiddly wiring, making it suitable from middle years all the way to upper secondary schooling. This workshop will lead you through a graphical programming language that is quick and easy to learn. **No prior programming experience necessary!**
Suitable for Primary & Secondary Teachers *recommended to BYO laptop

Sustainability Innovation Challenge

STEM Punks
Using the UN Sustainable Development Goals as a frame for problem solving, this session explores the use of SMART Sensor Boards and micro:bits as a prototyping tool. Teachers will learn coding techniques and how to collect real-time environmental data with sensors and explore the use of actuators in a SMART Reef model.
This is a great session that showcases how teachers can integrate sustainability, data analysis and visualisation, mathematical modelling, coding, and design thinking in one project.
Suitable for Primary & Secondary Teachers *80 minute session

Integrating Enterprise Skills in the Classroom

Academy for Enterprising Girls
Entrepreneurial education is about developing our students' ability to create social, cultural, or economic value while developing critical and creative thinking, undertaking complex problem solving, negotiating, communicating and leading.
This interactive workshop equips you with the tools and resources to foster entrepreneurial education in students using the free Academy for Enterprising Girls' Online Classroom. You will explore practical strategies for integrating enterprise skills—such as problem-solving, creativity, and financial literacy—into the curriculum. Teachers will leave with ready-to-use lesson plans, developed by STEM and enterprise educators, and strategies to inspire the next generation of female leaders and entrepreneurs.
Suitable for Primary and Secondary Teachers *recommended to BYO laptop

Creating Impactful STEM Programs with a Digital Technologies Approach

Australian Computer Society
This hands-on workshop is designed to help primary school educators plan exciting lessons and units that integrate the Digital Technologies Curriculum in meaningful ways into everyday learning.
Discover practical strategies to design technology-rich activities that spark curiosity, creativity, and problem-solving in young learners. You'll leave with easy-to-implement ideas and a clear approach to connecting classroom learning to real-world applications.
Whether you are introducing coding, robotics, or digital tools for the first time, this workshop provides the support and inspiration to engage your students in innovative and fun learning experiences.
Suitable for Primary Teachers *80 minute session

Sustainopreneurship - Entrepreneurship and innovation for sustainability

Young Change Agents
This concept has emerged from the earlier concepts of social entrepreneurship and ecopreneurship and means to use creative business organising to solve problems related to social and environmental sustainability as a strategic objective and purpose. In other words, it is a "business with a cause" – where the world problems are turned into business opportunities by deployment of sustainability innovations.
Learn WHAT, WHY & HOW to embed entrepreneurial design thinking in STEM to design real-world solutions (invention, innovation or campaign) for the Sustainable Global Goals.
Suitable for Primary and Secondary Teachers

Hands-on Science, Made Simple

Street Science
Discover how to bring science to life with everyday materials in this hands-on workshop for teachers. Explore three engaging, low-cost activities—Build a Catapult, Lava Lamps, and Blooming Paper Flowers—that demonstrate key scientific concepts through play, creativity, and curiosity. Perfect for making science exciting and accessible in any classroom. Teachers will leave with some great resources they can use back in their schools!
Suitable for Primary Teachers

Gamify your Growth with Skill Trees

Maker Queen AU
Learn how to leverage a powerful new gamification tool to find out your skill level, identify skill gaps and get inspired to try new things. Skill trees are video game inspired templates that you can colour in to show your progress across a huge range of skills, from electronics to 3D printing. They are a free resource available on the Maker Skill Trees community Github page, which has over 50 skill areas now covered.
In this hands-on activity, complete a skill tree in your chosen skill area and plan your own self-paced professional development based on your skill level.
Suitable for Secondary Teachers

Moving and Grooving with Granny: Creating digital solutions to help our elderly exercise

Australian Computer Society
About half of the physical decline associated with ageing may be due to a lack of physical activity. Without regular exercise, people over the age of 50 years can experience a range of health problems including: reduced muscle mass, strength and physical endurance, reduced coordination and balance.
In this session you will investigate the real-life scenario of how current technologies have been used to support and assist the elderly to engage with exercise. Using these solutions as inspiration, you will design a new technology used to promote exercise for the elderly. The session will follow the design thinking framework and is taken from a term unit of work created by ACS. Teachers will be provided with the complete unit of work and resources within the session.
Suitable for Year 4 to 6 students and/or teacher

Street Science Energy and Electrical Circuits

Street Science
Street Science's mission is to engage more Australian kids in science education by making it fun, meaningful and providing links to real-world situations.
In this hands-on workshop you will be introduced to the concepts of energy and electricity. You will then work through different stations where you will use snap together components to build different circuits. You will compare series and parallel circuits using light bulbs; make a fan fly; and make an FM radio. Loads of fun learning!
Suitable for Year 4 to 6 students and/or teacher

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 teacher

Pathology in Practice

Rebecca Lush, Museum Curator, The University of Queensland
Pathologists provide diagnostic information to patients and medical practitioners. They impact nearly all aspects of patient care, from diagnosing cancer to managing chronic diseases through accurate laboratory testing.
In this workshop you will experience what pathologists do by exploring real pathology specimens and interacting with them through our digital database, SLICE. Working in groups, you will study a specimen and answer questions that pathologists ask. Finally, you will have the opportunity to share your findings, using the database to draw and make notes, discovering new insights along the way.
Suitable for Year 7 to 10 students and/or teacher

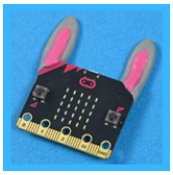
Scribbly Gum STEAM

Megan Forward
Scribbly gum is a name given to a variety of different Australian Eucalyptus trees which play host to the larvae of scribbly gum moths which leave distinctive scribbly burrowing patterns on the bark.
In this fantastic hands-on workshop, you will discover how fact, fiction, science & art can come together in a picture book…and in life. Working with Scribbly Gum Secrets by Dannika Patterson & Megan Forward as a reference text, you will be invited to hypothesize, problem-solve, experiment and get creative as you explore engineering & design in nature. It is also a great workshop for teachers to discover how to lead STEAM lessons using picture books.
Suitable for Year 4 to 6 students and/or teacher

Batteryless Wearable Health and Fitness Monitoring

CSIRO
In the movie The Matrix, the main character discovers that the intelligent machines use humanity as an energy source to power their machine society and a simulated reality to control the humans. Generating energy from humanity doesn't have to be like this dystopian future but can have huge benefits to our health and well-being!
In this hands-on workshop you will try out the latest in batteryless wearable technology and learn how you harvest the kinetic energy from movement to monitor and improve your health and well-being. This is a great workshop to discover how physics, technology, using data, and exercise can improve our health in an innovative way
Suitable for Year 7 to 10 students and/or teacher

Virtual pet



Damien Kee
Virtual pets sparked a craze among young people with the arrival of Tamagotchi, Digimon and Neopets in the mid to late 1990's. Nowadays there are hundreds of virtual pet raising simulations on a wide range of computing devices.
In this workshop you will explore coding with BBC Micro:bit by creating and interacting with your own virtual pets. Does it need feeding? Do you need to play with it? You will use simple programming skills to create and customise their own design.
Suitable for Year 5 to 8 students and/or teacher

Designing Safe Habitats to survive climate change

Students from Islamic College of Brisbane
Engineering is the application of science, maths, and design in the creation of real-world structures. Engineers not only have to understand the underlying theories but to collaboratively work with others to problem solve possible solutions to challenges that may arise.
In this workshop you will be challenged to work in teams to build a habitat that will be safe during the changing of our climate. In QLD where rains are heavy, the habitat needs to be able to allow water to drain well, while being able to hold the weight of the water as it is draining.
Suitable for Year 4 to 7 students and/or teacher

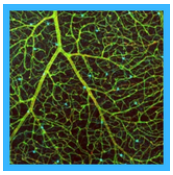
Cut Waste and FEAST Fabulously!

OzHarvest Australia and Scenic Shores State School
Each year Australians waste around 7.6 million tonnes of food across the food supply chain. This equates to about 312kg per person. Food waste costs the Australian economy around $36.6 billion each year. The choices we make have an impact on how much food waste we produce. These choices are influenced by people's attitudes and behaviours towards food.
In this hands-on workshop, OzHarvest and the students of Scenic Shores state school will lead a fun and engaging workshop exploring food waste and making positive food choices. You will get the chance to demonstrate how you can reduce food waste by cooking some easy recipes. Teachers can find out about FEAST (Food Education and Sustainability Training) - a FREE 10-week curriculum-aligned education program for primary and high schools.
Suitable for Year 4 to 7 students and/or teacher

Can we actually defy Gravity?

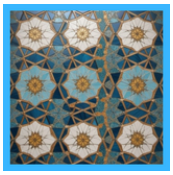
Students from Islamic College of Brisbane
Everyone has heard of the concept of gravity. Many might be aware that it is an acceleration towards the centre of the earth. But how did we get to 9.81ms-2 as a value without the precision tools that we have today?
In this hands-on workshop you will make use of low-tech tools and data to obtain the value of g, and demonstrate that our ancestors were able to innovate and discover laws not because of their tools, but because they were able to work with what they had.
Suitable for Year 7 to 10 students and/or teacher

Hidden Wonders: Science Under the Microscope



Ormiston State School
We are surrounded by an amazingly beautiful and complex world but most of it is hidden from us because it is so small! But science and technology have an answer!
In this workshop you will be using ipads and digital microscopes to explore your environment – from soils, rock, leaves to surfaces and textiles. By zooming in on our world, we are better able to understand how the world works and interact within our surroundings.
Suitable for Year 4 to 6 students and/or teacher

Mathematics, Geometry and Tessellations



Melanie Parry, Islamic College of Brisbane
The Islamic Star, is an eight-pointed star that is a common symbol in Islamic art and architecture. Islamic star patterns can be found in many countries, including Spain, Turkey, Iran, Morocco, Uzbekistan, and Egypt. They can be seen in a variety of media, such as stone, wood, latticework, and baked terracotta tiles. While the Islamic star is a religious symbol, there are numerous mathematical applications to it. In this workshop, you will use measurement and compasses to work though the math and science behind the Islamic star, and draw tessellations based on the patterns. A great workshop to learn about how art and maths combine!
Suitable for Year 4 to 6 one rotation, Year 7 to 10 alternate rotation - students and/or teacher

Mission to Mars

Stephen Broderick, St Ursula's College Toowoomba
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.
This hands-on workshop will have you working in groups to design a paper rocket, rotocopter and a logo for your mission. It will have you engage in the type of STEM thinking mission designers go through when planning missions. Groups achieve points for accuracy with their rocket, greatest height and distance reached by their rocket, slowest descent time for their rotocopter and points for their logo design. The group with the highest cumulative score from the three activities will win. Teachers will receive a handout to support them in running a similar mission in their own classes.
Suitable for Year 6 to 9 students and/or teacher

Captain's Secondary Cut: The Fastest Ideas on the High Seas

Hewlett Packard Education

Set sail on a fast-paced creative mission where you will spin wheels, vote on wild ideas, and "steal" inspiration to co-create a digital concept in record time. With pirate flair, AI image generation, and rapid prototyping, this collaborative workshop will turn chaos into creativity—no landlubbers allowed!

Suitable for Year 7 to 10 students and/or teacher

Black Holes and Gravitational Waves

OzGrav (ARC Centre of Excellence for Gravitational Wave Discovery)
How do scientists learn about invisible and exotic dark objects in space such as black holes? One way is to investigate how they create waves in the fabric of space!
In this workshop, you will learn about gravity and how to use it to understand things we cannot see in space! You will also learn about how objects like black holes come into existence and the scale of these compared to other things in space. Activities will include exploring the universe in virtual reality and using a gravity well to track the movement of objects in space.
Suitable for Year 6 to 8 students and/or teacher

STEAM Expo: hands-on activity area - Student and/or Teacher (selected as one workshop as you move around the activities)

Make the invisible visible

Centre for Microscopy and Microanalysis, The University of Queensland
Imagine having a microscope that magnifies and enhances the tiniest details, revealing a world beyond the limits of conventional resolution. By using advanced microscopes, scientists can create images that show details invisible to the naked eye. This makes it possible to explore and explain complex structures and phenomena that are also visually easy to understand.
In this Expo activity you will have the opportunity to reveal the hidden beauty of everyday objects using the Hitachi Tabletop Scanning Electron Microscope. Teachers can learn about the Inspire STEM Education Outreach which brings high tech equipment into your school.
Suitable for Year 5 to 8 students and teachers

Curriculum aligned virtual reality

Learning & Design Hub, QLD Department of Education
The VR Learning & Design Hub is a unique approach to Virtual Reality for education. It operates within the Queensland Department of Education and provides VR curriculum aligned software and supporting materials to Queensland schools. This expo area will feature an interactive VR showcase allowing teachers and students to experience firsthand how virtual reality transforms teaching and learning. The exhibit will demonstrate how the curriculum-aligned VR software can support diverse subjects and learning objectives, making complex concepts more engaging and accessible for young people. It is a great way to discover how VR can be used in your school!
Suitable for Year 7 to 10 students and teachers

STEAM Expo: hands-on activity area - Student and/or Teacher continued...

(selected as one workshop as you move around the activities)

Explore, Design and Create with VR

edgedVR

One of the key benefits of VR in education is its ability to provide young people with hands-on experiences and simulations. It allows users of all ages to explore and interact with complex concepts, environments, and scenarios that may not be readily available or feasible in a traditional classroom setting.
In this hands-on Expo you will have a go at creating 360 VR content using Edged VR's AI tool to generate scenes. Use these scenes to upload and edit, create VR projects to view in VR and XR.
Suitable for Year 4 to 10 students and teachers

Cyber Guardians: Crack the Code to Online Safety!

Helensvale State School

Explore the world of digital privacy and security through fun, hands-on challenges! From cracking secret codes to spotting phishing scams, from spotting deepfakes to identifying malware, you will have the opportunity to test your cybersecurity skills through interactive mini-games. Can you outsmart the hackers and become a Cyber Guardian?
Suitable for Year 4 to 10 students and teachers

The Future of Transport Signalling

Cross River Rail Delivery Authority

The Cross River Rail is a new 10.2km rail line that includes 5.9km of twin tunnels running under the Brisbane River and CBD; with four new underground stations, a new above-ground station at Exhibition, a rebuild for seven stations between Dutton Park and Salisbury; three new stations on the Gold Coast; construction of two new train stabling facilities and installation of a new world-class signalling system.
Come along to the Cross River Rail expo stand and discover the future of transport signalling using Ozobots! Look out for the cutest mini robots and see how they move according to signals detected by their sensors. Find out what this has to do with the new Cross River Rail signalling system and test out your skills by creating signals for the Ozobots.
Suitable for Year 4 to 6 students and teachers

Explore Electronics!

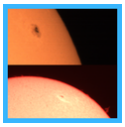
Integrated STEM

Get a glimpse of the world of electronics engineering. In this Expo activity you will explore various types of electronic components and build your own simple circuits using a breadboard, with the assistance of experienced facilitators and circuit-building aides. You will learn about the principles of circuit design, including resistance, voltage, and current, and how these components can be combined to create a functioning circuit. This activity will challenge you to think on your feet, work quickly and collaboratively in small teams, and develop your problem-solving skills.
Suitable for Year 4 to 10 students and teachers

Build your own habitat with Augmented Reality

Islamic College of Brisbane

Augmented reality (AR) integrates virtual content with the real world, which enhances the user's perception of reality in the physical world. It offers various applications in gaming, marketing, education, and training.
Join us in this journey where you can participate in part of one activity that the Islamic College of Brisbane runs with its students. Build your own habitat and see it come to life in front of you.
Suitable for Year 4 to 10 students and teachers



Solar Activity: Sunspots, Prominences and Filament

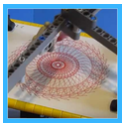
Stephen Broderick, St Ursula's College Toowoomba

Sunspots are phenomena on the Sun's photosphere that appear as temporary spots that are darker than the surrounding areas. A solar prominence (also known as a filament when viewed against the solar disk) is a large, bright feature extending outward from the Sun's surface. A prominence forms over timescales of about a day, and stable prominences may persist in the corona for several months, looping hundreds of thousands of miles into space.
In this hands-on Expo activity two telescopes will be set up for viewing sunspots, prominences and filaments. You will have the opportunity to observe the sun and estimate the Sunspot number based on your observation of the Sun.
Suitable for Year 4 to 10 students and teachers

Insect Pest Management for Australian Cotton

Bayer Crop Science

Australian cotton is in high demand around the world because of its high-quality, sustainability, and traceability. To achieve this, cotton crops need to be protected from pest moths which can cause extensive damage. Bayer Crop Science breed, raise and monitor the different life stages of colonies of Heliothis moths to learn best how to protect crops like cotton.
In this expo activity you will have a hands-on opportunity to touch and play with cotton, moth pupae and larvae, as well as determine the sex of the pupae using a scientific microscope. You can also race against each other with scientific pipettes to see who can dispense all of a solution the quickest!
Suitable for Year 4 to 10 students and teachers



Artist Challenge

BotBuilders

A Spirograph is a geometric drawing tool that uses rotating gears and shapes to create intricate, mathematically-derived patterns known as hypotrochoids (when the pen rotates inside the larger shape) and epitrochoids (when the pen rotates outside the larger shape).
In this fun Expo activity learn how Art and Maths combine by creating your own piece of art using LEGO built spirographs! Choose your colours and design away. You can choose to keep your artwork or add it to the art wall.
Suitable for Year 4 to 10 students and teachers

Street Science Slime Drop In

Street Science

Street Science's mission is to engage more Australian kids in science education by making it fun, meaningful and providing links to real-world situations.
In this awesome hands-on activity, the Street Science presenter will run you through how to make your very own slime and encourage you to then investigate and explore this curious material and its amazing properties!
Suitable for Year 4 to 6 students and teachers

Melting Metal Mementos

Mark Baker, Assumption College Warwick

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.
Suitable for Year 7 to 10 students and teachers

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!
Suitable for Year 5 to 9 students and teachers

Epic Garden

Epic Card Games

At the age of 6, Jade embarked on a journey around Australia with her family, living in a converted school bus. During this time, they stayed with farmers on their properties and they learnt how hard it could be to grow food and harvest crops. Inspired by the resilience of farmers Jade designed 'Epic Garden', a card game aimed at educating young people about farming and gardening all while having fun playing an awesome game!
Come along and meet Jade, learn about how she became a game designer, and have a go at the game. $1 of every game sold will go towards Farm Angels – a charity that supports Aussie Farmers.
Suitable for Year 4 to 6 students and teachers

Paper Plane Launcher

BotBuilders

Paper planes are a great way to learn about Science and Engineering while having a lot of fun. To build a great plane you will need to understand concepts such as aerodynamics, centre of gravity, wing design, good construction techniques, as well as how the process of testing and refining your design.
In this Expo activity you will use the handheld 3D printed launcher made for a First Tech Challenge Centre stage challenge to launch your own paper plane. Can you build an effective paper plane? You will have the opportunity to test your launch against a couple of the FTC robots as well!
Suitable for Year 4 to 10 students and teachers

Unleash Your Sustainability Superpowers

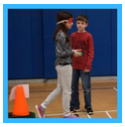
Academy for Enterprising Girls

The Academy for Enterprising Girls is a fun and exciting entrepreneurship program, available FREE to all young women in Australia aged 10 – 18, funded under the Australian Government's Women's Leadership and Development Program. The Academy is designed to cultivate young women's skills in design thinking, entrepreneurial and business skills.
In this Expo you will explore and discover the 17 United Nations Sustainable Development Goals. You will have an opportunity to create a list of things you care about under the umbrella of your chosen SDG goal and then using rapid ideation, list 5 innovative/enterprising solutions to help reach the goal.
Suitable for Year 4 to 10 students and teachers

Highly autonomous robots assisting humans

CSIRO Data 61

CSIRO's Data61 is one of the leading robotics and autonomous systems research labs in the world, based in Brisbane. We are comprised of two research groups, Robotic Perception and Autonomy and Robotic Design and Interaction, part of the Cyber-Physical Systems Research Program.
In this Expo activity we will demonstrate the action and mechanics behind a robot we built. This will showcase the potential of how robots can be used to support humanitarian missions.
Suitable for Year 7 to 10 students and teachers



Blind Programming

The Glennie School

Programming involves designing a set of step-by-step instructions (an algorithm or computer program when it involves computers) to achieve specific results or perform tasks.
In this fun Expo activity, you will learn how to code a basic algorithm and use sequencing to support your friend with step by step instructions to get a RC car safely through a maze. For an extra challenge, you (the programmer) can give your friend multiple steps at once. It's hard to think ahead, and this is a skill that is essential for coding! Have no fear though, if your friend's RC car doesn't make it through the maze, you will have a chance to 'debug' the code.
Suitable for Year 4 to 10 students and teachers

MagLev Technology

WeBuild

Get ready to float into the future with magnetic magic! Webuild's exciting Maglev Expo activity demonstrates how science and engineering team up to make trains levitate and zoom at lightning speeds.
Explore the power of magnetism: our model uses magnetic forces to lift the train off its tracks—say goodbye to wheels and friction! Dive into the physics behind how like poles repel, and discover how superconducting magnets and magnetic fields create this futuristic form of transportation.
From younger students curious about how magnets work to older teens exploring advanced concepts like electromagnetic induction and propulsion, there's something mind-blowing here for everyone.
Suitable for Year 4 to 10 students and teachers

Future You – Where is the STEM in that?

Future You Australia

In this hands-on activity, you will explore detailed scenes from everyday places—like a bustling zoo or a high-stakes footy game. Your mission? Find the hidden STEM. From ticket scanners to food courts, exhibits to engineering—you will use sticky notes and Sharpies to mark where you see Science, Technology, Engineering and Maths at work. The more you look, the more you will find.
This activity helps you realise one thing: STEM isn't just in labs. It's in life. Come see how a sticky note can lead to a STEM career.
Teachers can access to free resources from Future You that make these links stick—and spark conversations that break stereotypes and open minds.
Suitable for Year 4 to 7 students and teachers

Problem Solvers Design Challenge - Student and 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.

Data to Action: Innovating Climate Solutions for a Safer Future

CSIRO

Climate change affects the environment in many different ways, including rising temperatures, sea level rise, drought, flooding, and more. These events affect things that we depend upon and value, like water, energy, transportation, wildlife, agriculture, ecosystems, and human health. In this hands-on workshop you will identify climate change challenges, particularly bushfire prevention in Australia. Using open data from government and research platforms, you will brainstorm a prototype for an innovative app or product, showcasing how data-driven solutions can mitigate climate risks.

Suitable for Year 8 to 10 students and teachers

FUN with LEGO Robotics – Polar Bear Challenge

Grace Lutheran College

With global warming rapidly melting the polar ice caps, polar bears are struggling to survive. Can you design a robot to help them?
In this exciting hands-on workshop, students will build a robot capable of navigating treacherous ice chasms to rescue exhausted polar bears. How far can your robot go to make a difference?

Suitable for Year 4 to 7 students and teachers

The Power of Design Thinking

The University of Queensland

Design Thinking is a mindset and approach to learning, collaboration, and problem solving. In practice, the design process is a structured framework for identifying challenges, gathering information, generating potential solutions, refining ideas, and testing solutions.
In this highly interactive workshop, you will be introduced to design thinking and how it can be used to innovate and solve real-world challenges. By the end of the workshop, you will leave with practical tools to implement design thinking in your learning, enhancing both classroom experiences and future career readiness. A great session for students and teachers alike, led by the amazing Kellie King who has an extensive career coaching start-ups, individuals and businesses!

Suitable for Year 8 to 10 students and teachers

AI-Powered Waste Classifier

Southern Cross University

Improper waste disposal is a major environmental issue, leading to pollution and inefficient recycling. Many people struggle to correctly sort rubbish into categories such as plastic, paper, and metal, which reduces the effectiveness of recycling efforts.
In this hands-on workshop you will use the Teachable Machine software to create an AI-powered rubbish classification device that uses image recognition to automatically identify and sort waste into the appropriate bins.

Suitable for Year 6 to 10 students and teachers

Creating a healthy food future

Professor Lindsay Brown, Griffith University

Since the arrival of fast food in Australia in the 1970's and increasing sedentary lifestyles started becoming more normal there has been a rise in obesity in all Australians. Data shows that approximately 1.2 million children and adolescents are living with overweight or obesity. What can we do about this?
In this challenge, you will explore the extent and the cost on people's well-being and health of the problem, look how functional foods can make a difference and brainstorm how to overcome a range of barriers to make a difference to this growing issue.

Suitable for Year 6 to 10 students and teachers

Being Real World Problem Solvers with Citizen Science

Australian Citizen Science Association

Citizen science involves public participation and collaboration in scientific research with the aim to increase scientific knowledge. Citizen scientists work with scientists or the scientific framework to achieve scientific goals.
In this fascinating hands-on challenge, you will become citizen scientists helping to solve an issue at your school. Come and learn about the practical applications of citizen science and how you can be the problem solvers we need!

Suitable for Year 6 to 9 students and teachers

Beating the Bee Bug

The Glennie School

Over 70% of plant species on earth require pollination by a variety of species like bees, birds, butterflies and flies. This matters because such pollinators (animals and insects that cause plants to make fruit or seeds) are critical both for the reproduction of wild plants and for agricultural food production.
There is one particular parasite that threatens to decimate bee populations. Innovation and creativity in design is required physically and theoretically, to reduce the risk of this parasite causing irreversible damage to Australian agricultural and horticultural sectors.
In this problem solver session, you will be taken through the design process to create potential solutions to the Varroa mite threat out of simple, accessible materials. Teachers will receive handouts so they can run this with their students.

Suitable for Year 5 to 9 students and teachers

DesignDash: Helmets – Necessary or a Nuisance?

Brisbane South State Secondary College

The debate around mandatory bicycle helmets can quickly become emotive, complex and ambiguous due to the perceptions of helmets and conflicting research. A major meta-analysis study showed helmets prevented serious injury or fatality by 60%. However, some studies show that wearing a bicycle helmet means cars overtake with less distance than without helmets as they deem the cyclist to be more protected.
In this problem solver workshop, you will engage in a hands-on activity that explores the question, 'Helmets – Necessary or a Nuisance?'. Using a brain impact simulator, you will collect data and collaborate in groups to create a prototype of a helmet. These helmets will be tested to evaluate their efficacy.

Suitable for Year 5 to 9 students and teachers

Code Red: Design a Flood-Rescue Drone Prototype

Beenleigh State High School

As many of you are aware, the increasing frequency of floods and extreme weather events is leading to a range of ethical and logistical challenges when communities are isolated or unable to access essential supplies during these climate change emergencies. What we require are innovative, science-based solutions to support these vulnerable communities.

In this hands-on STEM workshop, you will use the Design Thinking process to prototype a drone that delivers essential supplies during floods. You will brainstorm, build, and test a model using simple materials, linking real-world disaster resilience with forces, motion, and emerging technologies. You also will have the opportunity to co-create your own design thinking process activity based on the Science curriculum to take back and present at your school.

Suitable for Year 5 to 9 students and teachers

Sustainable Sparks: Dream, design, do for global goals impact

Young Change Agents

The 17 Sustainable Development Goals (SDGs) are an urgent call for action by all countries. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.

In this hands-on workshop you will explore the 17 Sustainable Development Goals and develop innovative, real-world solutions to tackle global challenges. Through creativity, collaboration, and critical thinking, you will design an invention, innovation, or campaign driving positive change & contributing to a more sustainable future.

Suitable for Year 4 to 10 students and teachers

Becoming a Game Designer and Entrepreneur

Epic Card Games

Jade Catania is the 18-year-old entrepreneur who has created the game, Epic Garden, made for kids by kids, to educate children on the struggles farmers endure across the seasons.

In this workshop you will discover how the Epic Garden card game took shape from a concept to final production. Along the way you will learn game design, playtesting, and the educational benefits of farming and gardening. Perfect for young creators and educators, this hands-on session explores strategy, sustainability, and fun—turning ideas into reality. You will also have a chance to play the game in teams. Will you be the first one to deliver 10 crops?

Suitable for Year 4 to 7 students and teachers

Is someone out there?

Griffith University

Humanity seems to be on the edge of a new age of space travel. Venturing into space presents numerous challenges, including the harmful effects of radiation, the physical impact of microgravity, and the psychological effects of isolation and confinement.

In this problem solver workshop, you will explore how people in space are able to take care of their wellbeing and still remain connected to each other and Earth. Using design thinking and your problem solving you and your team of designers and engineers will figure out ways to engage future astronauts with each other and people back on Earth.

Suitable for Year 4 to 10 students and teachers

Intelligent machines that learn??

Islamic College of Brisbane

Artificial Intelligence (AI) has emerged as a revolutionary force, transforming industries and reshaping the way we interact with technology. However, it is critically important to recognize that AI has inherent limitations.

In this hands-on workshop you will be introduced to the fundamentals of artificial intelligence. You will explore how AI systems use data to make probability-based predictions rather than true understanding. Designed for students with prior experience in Scratch, the session highlights the limitations and misconceptions of “intelligent” machines.

Suitable for Year 6 to 10 students and teachers

Captain’s Primary Cut: The Fastest Ideas on the High Seas

Hewlett Packard Education

Set sail on a fast-paced creative mission where you will spin wheels, vote on wild ideas, and “steal” inspiration to co-create a digital concept in record time. With pirate flair, AI image generation, and rapid prototyping, this collaborative workshop will turn chaos into creativity—no landlubbers allowed!

Suitable for Year 4 to 7 students and teachers

Automating Australian Agriculture

Queensland Computers

Agriculture is crucial to Australia’s food security, economic stability, and cultural identity, but faces significant challenges like climate change, food security concerns, and the need to reduce crop waste. The industry's climate vulnerability, coupled with increasing global food demands, requires innovative solutions to ensure long-term sustainability.

In this hands-on problem-solving activity, you will work in teams to design and use a Matatalab VinciBot and other materials to prototype solutions to address agricultural issues in Australia.

Suitable for Year 5 to 8 students and teachers

Flow of the day....

*Listed program is subject to change

8.15am	Sign-in, coffee and networking
8.45am	Master of Ceremonies - Welcome, set up for the day and housekeeping
9.00am	**KEYNOTE SPEAKER**
9.40am	**ROTATION ONE - 40 minute parallel sessions** >> Teacher only Mini-Master Classes >> Student and/or Teacher DigiDesign hands-on workshops & STEAM Expo
10.25am	**MORNING TEA -** An opportunity to network with other teachers and students, and explore EXPO
11.00am	**PROBLEM SOLVERS DESIGN CHALLENGE - 80 minute parallel sessions** >> Design challenge sessions for Year 4 to 10 students and teachers
11.00am	**TEACHER ALTERNATE SESSIONS - 80 minute parallel sessions** >> Teacher Mini-Master Classes OR >> Teacher Networking and STEM Pathways session ◦ Opportunity to connect with other teachers and presenters to share ideas, possibilities and practices. Meet with the sponsors in the STEM Expo area to discuss (without students) how they can support you in delivering and inspiring STEM in your school
12.25pm	**LUNCH -** An opportunity to network with other teachers and students, and explore EXPO
1.00pm	**KEYNOTE SPEAKER**
1.40pm	**ROTATION TWO - 40 minute parallel sessions** >> Teacher only Mini-Master Classes >> Student and/or Teacher DigiDesign hands-on workshops & STEAM Expo
2.30pm	**FEEDBACK AND CONFERENCE COMPLETION** >> Awarding of prizes to attendees >> Completion of feedback form
2.45pm	**CLOSE OF THE CONFERENCE**

Who the conference is for...

- **Year 4 to 10 students** - those who are already (or aspire to be) STEM Leaders in your school OR students' schools wish to spark an interest in, and engagement 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 connect and elevate their STEM discipline
- **Principals and Deputy Principals** - to witness what is possible by embedding STEM authentically in your school
- ...and the event is a 6 hour Professional Learning day for teachers - **certificate provided**

The theme 'Dream, Discover, Do!' will highlight how STEAM is dynamic and fun, and empowers and develops people to dream and shape the future.

The 'It Takes a Spark! STEM Conference' on Friday, 20th June is a vibrant FULL-DAY of learning, connection, excitement, and imagination, designed by educators for students and teachers.

- **Engage** your students across the day with multiple opportunities, and innovative hands-on STEM learning allowing them time to 'Discover' new interests and further their ability to 'Dream and Do'!
- **Students** participate in three rotations of preselected student and/or teacher DigiDesign hands-on workshops, including the STEAM Expo activities, and Problem Solver Design Challenges.
- **Teachers** tap into the latest developments, innovations, tips, and tools in STEM from experts and practitioners.
- Professional Development stream including **Teacher Mini-Master** Classes gaining access to a broad range of STEM resources to implement back in the classroom.
- **Two** inspiring Keynote speakers connecting to a broad range of listeners.
- Time to effectively **network and collaborate** with other school, educators and industry experts, and gain insight into their STEM activities and programs.

Further information

- In 2025 the It Takes a Spark STEM Conferences are being held in Queensland (one Full-day Spark, and a Mini-Spark conference), and a Full-day Spark in Victoria and Western Australia.
- FAQ's, Impact, Media and News appearances can be found on our website.

Registration

- Begins at 8.45am / completes at 2.45pm
- **Early bird** registration is recommended **closing** 23/05/2025
- Book Now or Hold places: you can hold early-bird places whilst you gain approval. Complete the Registration form and select 'hold place'.
- **Teachers** can attend without students.
- **Students** must attend with their teachers.
- Excursion pack available
- Morning tea and Lunch included for **students and teachers**.

Cost

- Educator / Teacher: **Early bird $205.00** / Regular fee $245.00
- Teacher presenter: complimentary*
- Pre-service, Aide/Support staff, Homeschool educator: **Early bird $79.00** / Regular fee $99.00
- Student: **Early bird $30.00** Regular fee $35.00
- Student presenter: $27.50*
- Scholarship may be available upon application

THANK YOU TO OUR SPONSORS

Silver Sponsor — Academy for Enterprising Girls

Silver Sponsor — Street Science

Silver Sponsor — integratedSTEM

Silver Sponsor — STEMPunks® Inspiring Tomorrow's Innovators

Supporter — webuild

Scholarship Sponsor — Queensland Computers Transformational Technology

Contact

Rachel Manneke-Jones
Registrations, Bookings, Questions
P: 0411 270 277
E: rachel @spark-educonferences.com.au
W: spark-educonferences.com.au

Host School

Islamic College of Brisbane
45 Acacia Rd
Karawatha QLD 4117

Conference Coordinator

Intuyu Consulting

Dr Adrian Bertolini
E I adrian@spark-educonferences.com.au

Book Now or Hold Places
spark-educonferences.com.au/queensland-spark-2025/