

It Takes a Spark!

EDU Conference

Friday, 9 August 2019 | Brisbane

STUDENT AND TEACHER PROGRAM

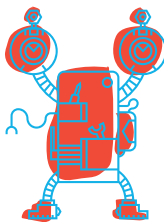
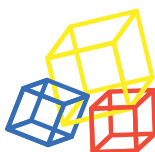
Teacher PD workshops from leading STEAM experts, teachers and students on topics as diverse as

- >> Drones in STEM Education
- >> Experimentary
- >> Ukit Experience Class for Teachers
- >> Learning Algebra through Gamification
- >> CS Uplugged in the Classroom

Hands-on sessions for students and teachers, examples

- >> Future City Makers: - 3D Design, Virtual Reality & Augmented Reality
- >> Aboriginal Astronomy
- >> Introduction to EV3 Mindstorm Robotics
- >> Capture the Flag
- >> Young Changemakers
- >> More than Bits and Bytes - Binary Unplugged
- >> Sustainability MiniHack Experience
- >> Internet of Things
- >> Snap Rovers - Circuits to Motion!
- >> STEAM Circus
- >> UBTECH Astrobot: Build, Program, Compete

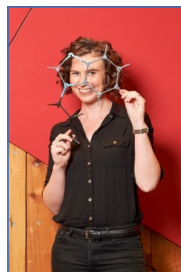
plus Problem Solvers Sessions...



Outstanding Keynote Speakers

AMY HEFFERNAN

**Field Application Specialist at SCIEX.
Research Fellow at University of QLD
Superstar of STEM**



Amy Heffernan is an analytical chemist specialising in mass spectrometry, a technique used to map the chemical fingerprint of food, drugs and living cells. She combines chemistry, critical thinking and technology to solve complex problems in the environment and human health. Amy was recognised as an inaugural Superstar of STEM by Science & Technology Australia, and is passionate about diversity and inclusion in science and business.

DR TALITHA BEST

**Research Scientist and Psychologist
Associate Professor at CQ University**



Talitha Best is both a research scientist and a registered psychologist. In her research she investigates how nutrition and certain nutrients influence the thinking and memory in adults. As a psychologist she promotes strategies to support optimal well-being through community education. She is passionate about empowering health and well-being in all people!

MORE INFORMATION: www.spark-educonferences.com.au/it-takes-a-spark-brisbane/

Major Sponsor



UBTECH

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TEACHER MINI-MASTER CLASSES

45 min parallel sessions held across 2 rotations

*Listed program is subject to change

Rotation One

Ukit Experience Class for Teachers

UBTECH



In this session you will have the opportunity to explore the latest Artificial Intelligence education curriculum and the AI Education teaching tool – the Ukit series. The Ukit is a robotic themed approach to learning and is a gold award winner at the New York Design Awards. Come and see how you can introduce learners to the latest in AI and make robotic learning engaging to the student!

School / Teacher stages: Beginning and Next Step
Suitable for Primary, Secondary and Specialist Teacher

CS Unplugged in the Classroom

Brisbane Robogals



TCS Unplugged is a collection of free learning activities that teach Computer Science without the use of computers. The content is designed to teach computing and computational thinking through interactive activities. We will be examining the principles of CS Unplugged, and going through some interactive examples of the CS Unplugged material (binary and error detection). Links to resources providing more explicit curriculum will be supplied.

School / teacher stages: Beginning and Next Step
Suitable for Primary & Secondary Teacher

Learning Algebra through Gamification

Yuji Takahashi, Math Mate



Math Mate

Numerous studies have shown that student performance in Maths increases when engagement increases. Math Mate develops gamified learning apps for high school students that encourage play, exploration and interactivity when learning algebra.

In this showcase we will:

- describe and demo the interactive technology we have developed,
- outline the key design choices we have made to improve student engagement,
- report our results and learnings from working with Queensland schools in 2018, and
- let participants use our apps to solve maths problems themselves

School / teacher stages: Beginning, Next Step and Extending
Suitable for Secondary Teacher

Rotation Two

Drones in STEM Education

Damien Aldridge and Natalie Anderson, STEM Punks



In this interactive and hands-on workshop we explore how Drones can be used as a teaching tool for project, and problem based learning.

School / Teacher stages: Beginning and Next Step
Suitable for Primary & Secondary Teacher

Experimentary

Dr Robert Bell, Experimentary



Explore a new science education resource that is all about inquiry based learning. Designed by Dr Robert Bell (host of kid's science TV show Scope) there will be plenty of learning by doing and a bit of fun too!

School / teacher stages: Beginning, Next Step and Extending
Suitable for Primary Teacher

Sponsored by

UBTECH

Hosted by



SHARE
NETWORK
CONNECT

STUDENT / TEACHER DIGI-DESIGN MINI WORKSHOPS

45 min parallel sessions held across 2 rotations
Student (Year 4 to 10 girls) and / or Teacher

* Listed program is subject to change

Rotation One

UBTECH Astrobot Building

UBTECH



Robotics requires problem solving, critical and creative thinking, and collaboration. In this session you will be designing and building an Astrobot to meet a design brief and perform in a competition. All attendees for this session will automatically go into the Astrobot competition during the Problem Solvers session

Suitable for Primary and Secondary Student / Teacher

Future City Makers - 3D Design, Virtual Reality & Augmented Reality

Damien Aldridge and Natalie Anderson, STEM Punks



In this interactive and hands-on workshop we explore how 3D Design, Virtual, and Augmented Reality can be used for innovative and creative problem solving.

Suitable for Primary and Secondary Student / Teacher

What's in the Box?

Year 9/10 Digital Technology Students, Mt Alvernia College



Come open a box and find a Device that you can program, code, move or make. Students will offer assistance to help you with a project associated with different devices in each of the boxes. Grade 10 students have written projects to introduce you to a new device, you can work through the basics to get you familiar with the device(s) and then tackle the challenge project.

Suitable for Primary and Secondary Student / Teacher

Introduction to EV3 Mindstorm Robotics

Simon Richardson & Justin Pembroke - Chancellor State College



Robotics is a great way to integrate learning of the digital and design technologies curricula. In this session students and teachers will work in pairs to code and operate EV3 Mindstorms robots. Learn about computational thinking coding a driving the EV3.

Suitable for Primary and Secondary Student / Teacher

Young Changemakers

Jeanette Hodgson and Rie Kocho, ChangeMakeHer

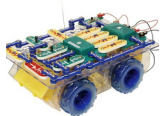


This mini-workshop will be a rapid innovation challenge for students to address the impacts of climate change on Brisbane. This natural phenomenon will involve numerous problems (rising temperatures, natural disasters etc.). Student teams will be given classified briefings over the course of the activity, each with updates on new problems that they will need to solve. Their mission will be to produce a product or outline actions that can be taken to solve the crisis with which they will be presented.

Suitable for Primary and Secondary Student / Teacher

Snap Rovers - Circuits to Motion!

Griffith University Women in Engineering



We are surrounded by technology - from phones, to lighting. But how do these all function? Participants will be able to work with snap circuitry, in order to observe the ways in which we can manipulate the flow of electricity through basic circuits. From here, participants will be able to create links to the world around them, and gain an understanding of the fundamentals of electronics.

Suitable for Primary Student / Teacher

Experimentary

Dr Robert Bell, Experimentary



Science is all about discovering how the world works. Trying to find answers to all the "What, How and Why" questions. Come and have a go with the new science resource designed by TV presenter and former CSIRO scientist, Dr Rob Bell. There will be plenty of learning by doing and a bit of fun too!

Suitable for Primary Student / Teacher

Scratch and Micro:bits

Year 8 Students, Mt Alvernia College



Find out how to interact with Scratch 3.0 using a microcontroller. Grade 8 students will show you how to code in the new version of Scratch (launched 2nd January 2019), how to connect your micro:bit using blue tooth and how to use the accelerometer and buttons to interact with games. All devices for this session will be provided. Completely hands on workshop, delivered by students.

Suitable for Primary and Secondary Student / Teacher

STEAM Circus

Dr Meg Hooper, STEAM Circus



In this session students will learn awesome circus skills such as hoola hooping, acro-balance (balancing on other people), juggling and other apparatus and also learn a relevant STEM concept at the same time. All students can participate in learning circus skills regardless of their physical capability, there's a place for everybody in circus!

Note: Teachers need to be present with their students and the presenters will need to know of any injuries or physical limitations prior to the session so they can support you!

Suitable for Primary Years 4 to 7 Student / Teacher

An Introduction to Aboriginal Astronomy

Dr Michael Cowley, USQ / Macquarie University



In this session you will discover how Aboriginal and Torres Strait Islander peoples use observations of the night sky to inform decisions about some everyday activities, e.g. food gathering and ceremonies. The session will involve several hands on activities

Suitable for Primary and Secondary Student / Teacher

STUDENT / TEACHER DIGI-DESIGN MINI WORKSHOPS

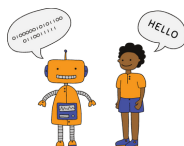
45 min parallel sessions held across 2 rotations
Student (Year 4 to 10 girls) and / or Teacher

* Listed program is subject to change

Rotation Two

More than Bits and Bytes - Binary Unplugged

Reid Moule and Students from HumpyBong SS



This session will focus on some really fun ways to learn how computers talk to one another using binary including physical activities and magic! For teachers this will include a lot of takeaways (with the Binary presentation attendees get a ten week unit (lesson plans x 10) including assessment and supporting resources. Bring a USB!).

Suitable for Primary and Secondary Student / Teacher

UBTECH Astrobot Programming

UBTECH



Even if you didn't get the chance to compete in the Astrobot competition during the Problem Solvers session you can learn how to program your bot during this session. Pose Record Play (PRP) is a simple way to make your robot take the actions you want. Go forward, move backward, pick up and put down. Come along and make a robot follow your every command!

Suitable for Primary and Secondary Student / Teacher

An Introduction to Aboriginal Astronomy

Dr Michael Cowley, USQ / Macquarie University



In this session you will discover how Aboriginal and Torres Strait Islander peoples use observations of the night sky to inform decisions about some everyday activities, e.g. food gathering and ceremonies. The session will involve several hands on activities

Suitable for Primary and Secondary Student / Teacher

Capture the Flag

Teena Matai and Elise Taylor, Kilcoy State High School



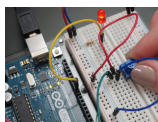
Team will use newspapers and masking tape to construct a free-standing structure to protect their flag. Other teams then use nerf guns and/or physics launchers to attempt to "capture" the opposing team's flags, by breaking through the barrier. Each team has 6 shots.

There will be constraints within which the teams must work under in order to provide a fair challenge.

Suitable for Primary and Secondary Student / Teacher

Controlling Circuits with Arduinos

Brisbane Robogals

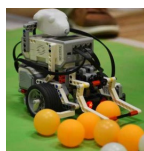


Learn the basics of Electrical Engineering through a hands-on experience with Arduino microcontrollers. Participants will learn how to set up simple circuits and use the Arduino with other electronic parts to control lights and buzzers.

Suitable for Secondary Student / Teacher

Exploring Robotics and Engineering

Wilson Kong, Robotics Playground



Explore the pedagogy of learning through playing by approaching robotics and engineering in a fun and engaging way! We will set up a wide range of different activity stations including a robot obstacle course, electric circuit exploration, mechanical structures, and a drones' obstacle course. Attendees will get the chance to explore and get exposure to different fields of engineering and equipment along the way.

Suitable for Primary and Secondary Student / Teacher

STEAM Circus

Dr Meg Hooper, STEAM Circus



In this session students will learn awesome circus skills such as hoola hooping, acro-balance (balancing on other people), juggling and other apparatus and also learn a relevant STEM concept at the same time. All students can participate in learning circus skills regardless of their physical capability, there's a place for everybody in circus!

Note: Teachers need to be present with their students and the presenters will need to know of any injuries or physical limitations prior to the session so they can support you!

Suitable for Primary Years 4 to 7 Student / Teacher

Sustainability MiniHack Experience - Entrepreneurial Problem Solving for the Planet

Peta Ellis, River City Labs



Join us for a 45 minute mini-hack session that walks you through the process entrepreneurial thinking and process including ideation, validation and framework for pitching sustainable solutions for global problems.

Suitable for Secondary Student / Teacher

Internet of Things

Shane Krog and Gatton SS Students



What if everything was connected? Students in the Gatton State School STEM Extension Program have been investigating automation and the internet of things. They have used Kitsi robotics hardware and the Kitsune programming platform to create automated prototypes of everyday objects.

In this session, students will demonstrate their prototypes and you will participate in a series of hands-on programming activities using the Kitsune platform. Be prepared to learn!

Suitable for Primary and Lower Secondary Student / Teacher

STUDENT / TEACHER DIGI-DESIGN MINI WORKSHOPS

45 min parallel sessions held across 2 rotations
Student (Year 4 to 10 girls) and / or Teacher

*Listed program is subject to change

STEAM Expo Hands-on Activities area

Suitable for Primary and Secondary Students / Teachers

Shane Krog & Students from Gatton State School

Gatton SS STEM students will demonstrate their prototypes and run a series of hands-on programming activities using the Kitsune platform. Be prepared to learn!



Differentiating Learning with Kitsi Kitsune

After seeing the power of the Kitsi robotics hardware and the Kitsune programming platform as demonstrated by the Gatton SS students, come along and talk to Peter and Alex about how the platform can be used to accommodate a differentiated classroom for STEM and Maker activities. Attendees will get the opportunity to use the platform to bring to life autonomous vehicles, plant monitoring, and even a robotic arm.



Are you smarter than a Year 7/8 student?

Test your mathematical mind by trying your hand at the University of Queensland and QAMT year 7/8 Maths Quiz.

Modern Teaching Aids



Throughout the day hands-on activities with:

Lego Spike Prime – program a simple STEAM project for Yrs 5-8 with built units linking to ACARA

Lego WeDo – program a pre-built Lego WeDo model using the WeDo software

Sam Labs – explore prototyping a sustainable house and demonstrating the IOT with programmable blocks.

Dash Robot – Easy to use coding activities with Dash
Come try, play and learn!

Robotics Playground: Wilson Kong



Wilson will be running a short activity which involves wifi controlled dueling robots. Come and explore the pedagogy of learning through playing.

Displays from sponsors

- STEM Punks
- Math Mate
- OfficeMax WINC
- Engineers Australia
- Experimental
- and more...

Rotation One & Two

Minidrones: Mount Alvernia College



Experience the thrill of flight and accomplishment as you learn to program minidrones using an intuitive visual programming language.

Get your L plates if you can assemble and fly our drones, P plates if you can progress onto the much swifter drones and a full license if you can complete a circuit!

The Science of ... : Wonder of Science



Dr Natalie McKirdy and Dr Kaylene Butler will be demonstrating some amazing short science investigations including the science of sherbet, balloon inflation with yeast and identify the planet.

Come along and choose an item from the science mystery bag!

KISS Coding: Micromelon Robotics

Daniel, Tim and Adam from Micromelon Robotics will be running hands-on sessions that will provide both students and teachers with an opportunity to write code to make robots complete challenges, such as line following, navigating mazes and avoiding obstacles in a 3D printed town.



Renewable Energy - I'm a big Fan! UQ Women in Engineering

Create your own wind turbine using a number of different size blades. We will then test it at our testing station where we can record the power generated.



Astrobot Soccer Program - UBTECH

You may have seen robots playing soccer on TV. Come and learn the computer coding skills to program robots to play soccer and problem solve on the run.

WHAT STUDENTS ARE SAYING AFTER ATTENDING THE TOOWOOMBA CONFERENCE!

**SHARE
NETWORK
CONNECT**

"I thought I'd never come to this but I learnt that I can achieve whatever I put my mind to and girls can do whatever their heart desires"

"I will talk to my teacher into starting a new subject or session with some of the activities I did today"

"I really liked the fact that this whole thing was about women – it was fun, exciting and really inspiring"

PROBLEM SOLVERS DESIGN CHALLENGE

80 minute parallel sessions

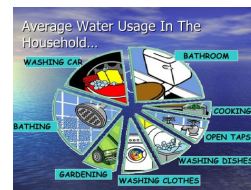
Student (Year 4 to 10 girls) and/or Teacher

*Listed program is subject to change

Why Waste Water?

University of Queensland

With droughts and water shortages becoming more prevalent due to climate change our household usage of water is unsustainable in the long term. What can we do in our homes and our schools to minimize our usage and also effectively reuse water we do use?



SolarBuddy Social Innovation Challenge

Johnathan Lamb, Solar Buddy

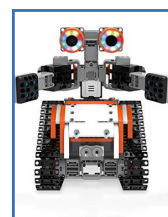
The SolarBuddy Social Innovation Challenge takes students through a design process of creating a product for humanitarian use. Students will be introduced to the Sustainable Development Goals and create a solution to one of the 17 goals based on their passions.



Astrobot Competition

UBTECH

Robot competitions are a great way to learn coding and develop your problem solving and collaboration skills as a team. In this 80 min session you will get hands-on experience on programming an Astrobot to achieve a challenging goal. Attendees need to have participated in the Astrobot Building digidesign session to be involved with this Problem Solvers workshop.



Sustainable Bridges

Engineers without Borders, UQ and QUT

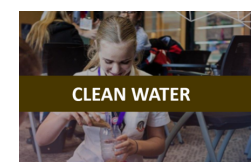
A bridge can expand a community's economy; it can also have unintended consequences on culture, crime and health. Learn more than just about the bricks and mortar of sustainable bridges.



Clean Water

Engineers without Borders, UQ and QUT

How do you fix sanitation and access to clean water globally? Trade, commerce and education have led to disparity in water standards across the globe, but engineers can help!



Coding for Disaster Relief

Engineers without Borders, UQ and QUT

Software coding technology can be used for rapid aid and communication in a disaster zone. In this challenging and rewarding workshop, you will use Python to create emergency distress signals.



Creating an Autonomous Vehicle

Peter Riley and Alex Agudelo, Kitsune

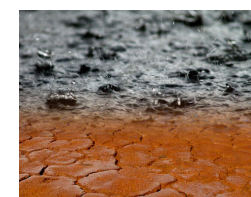
It is estimated that 217 million people have moderate to severe vision impairment, and 36 million are registered as blind. Autonomous vehicles could offer people with vision impairment an alternative and safer route to travel. In the future, your future things, will advance to such an extent that human sensors will be replaced by technology. Your challenge: To build and program an autonomous vehicle that is aware of its surroundings. Your vehicle will be required to navigate a pre designated obstacle course without a collision.



Destruction of Australia's Basic Needs

Claudia Lezar, QUT

In this Problem Solver session you will be put to the challenge of finding a solution to the drastically changing weather patterns. This adverse weather is destroying Australian farmlands and causing an economic burden through the need to increase importation of basic necessities. You are to work collaboratively to construct innovative solutions to one of Australia's increasingly prevalent issues.



Flow of the day....

- 8.15am Arrive for Registration, coffee and networking
8.40am Master of Ceremonies - Welcome, set up for the day and housekeeping
8.50am **KEYNOTE SPEAKER - AMY HEFFERNAN**
9.25am **ROTATION ONE - 45 min parallel sessions**
 >> [Teacher Mini-Master Classes](#)
 >> [Student and Teacher DigiDesign Mini-Workshops and STEAM Expo](#)
10.15am **MORNING TEA**
 An opportunity to network with other teachers and students, and explore trade displays
10.40am **THE FUTURE OF ROBOTICS - UBTECH**
11.05am **PROBLEM SOLVERS DESIGN CHALLENGE**
 80 min session - parallel sessions for teachers and Year 4 to 10 students
12.30pm **LUNCH** - An opportunity to network with other teachers and students, and explore trade displays
1.10pm **KEYNOTE SPEAKER - DR TALITHA BEST**
1.45pm **ROTATION ONE - 45 min parallel sessions**
 >> [Teacher Mini-Master Classes](#)
 >> [Student and Teacher DigiDesign Mini-Workshops and STEAM Expo](#)
2.35pm **WHERE TO FROM HERE**
 The intent of this session is to build connections and networks to continue growing and learning after the conference.
2.50pm **UBTECH Simon Says - Be an Iron Man! - 60min Student session**
3.50pm **FEEDBACK AND CLOSE OF THE CONFERENCE**
 Fill in your feedback forms and be invited to be on the Steering Committee for next year.



UBTECH Simon Says - Be an Iron Man! 60min Student Session

Work in teams to test your problem solving and programming skills. Simon Says is a game we have all played as children. Using a Simon Says theme, student teams will be taking turns to command Iron Man into action.

The last team remaining will take home the Iron Man as a prize!

WHERE TO FROM HERE? SESSION

Opportunity for teachers and students to meet with university and industry experts, expert teachers and inspiring students.
The intent of this session is to build connections and networks to continue growing and learning after the conference.



**Keynote Speaker
Dr Talitha Best**
Research scientist and a registered psychologist.
Central QLD University



Tanya Meessmann is a Communications, Branding and Film professional and the founder of FUEL | Girl Shaped Flames: a company connecting Secondary girls with Extraordinary Women from around the world for experiential opportunities that help them identify the fire within and break through limitations to reach their full potential.



Dr Natalie McKirdy has a PhD in retinal biomaterials engineering and co-ordinates over 100 PhD students from leading Queensland universities as Young Science Ambassadors who support teachers across the state, in-person, to implement the Wonder of Science approach to STEM teaching and learning.



Dr Rob Bell
Best known for donning his trusty white lab coat and jumping into science as the host of the kid's science TV show Scope. A Bachelor of Science with Honours and a PhD in materials chemistry from UQ.



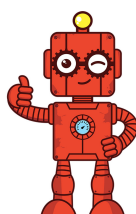
Peta Ellis is a Startup Community Activator with a background in Communications, PR, Marketing and Media Relations and the CEO of River City Labs. Through River City Labs she has driven Brisbane's startup community to be a recognized ecosystem nationally.

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Math Mate

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