The BRAINWAVES Club

Term 1 2021: TechnoKids – Years 3 and 4
Venue: Ryde Public School

Semester Fee: $285.00

IT'S ALL ABOUT THE JOURNEY

Famous inventor Thomas Edison tried a thousand different ways to make the lightbulb work before he experienced success. After he revealed his momentous discovery, a reporter asked how it felt to fail a thousand times. Edison's answer? 'I didn't fail a thousand times – the light bulb was an invention with a thousand steps!'

This semester, the TechnoKids – tomorrow's change makers! – will explore a variety of technologies and use different materials and programs to build programmable models. They'll learn to design, create, test with rigor, observe and critically evaluate each one. We'll learn from our failures together – but even better is that we'll celebrate our successes together, too, and have plenty of fun along the way!

6 February
Meeting 1:   **Is That Thumping a T Rex or My Heart?**
Focus: **Design, Coding, Science**
Imagine you were racing a T-Rex. Would you expect your heartrate to rise or fall – and by how much? Armed with a quirky device known as Makey Makey and some creative coding written in Scratch, the TechnoKids will come up with the definitive answer. First, we'll race our prehistoric creatures across the screen to get them warmed up, then we'll warm ourselves up and check on our pulses using a real stethoscope, another tiny piece of technology called an oximeter and a stethoscope you'll build yourselves. Finally, it's time - ready, set, race!

20 February
Meeting 2:   **Whole Lot of Shaking Going On!**
Focus: **Science, Coding, Technology**
Many everyday digital devices rely on accelerometers to detect changes in motion. Ever had to shake your phone or turn your iPad so an image on the screen is the right way up? It's an accelerometer that detects the movement. What about the technology built into a car that deploys the airbags when there is a sudden dramatic change in speed? You guessed it - that's an accelerometer, too! In this meeting, the TechnoKids will use their Microbits (which feature a built-in accelerometer) and some creative coding to create an old favourite game – Scissors/Paper/Rock. Then, as an extra challenge, we will attempt to make a seismograph!

6 March
Meeting 3:   **Robo Roach**
Focus: **Design, Robotics, Coding, Science**
Scientists at the University of California in Berkeley are convinced they have come up with a breakthrough in robot design. Their study of living organisms and the ingenuity of nature has offered insight that they have now incorporated into the world's first robotic cockroach! Using LEGO® EV3s, TechnoKids will build their own robotic cockroaches, including use of ultra sonic sensors which enable our Robo Roaches to sense what's happening in their world and respond. The result? Your cockroach will be able to know when you get too close to it and scurry away! We will get to hold some real Giant Burrowing Cockroaches in our hands, but don't worry - they're very slow and very clean. Completely different to their city cousins (the ones we're used to)! By the end of our lesson, you may even call them cute! Honest!
Requirements: please download the following software onto your laptops prior to meeting. Note: Mindstorms Educational version not home version: https://education.lego.com/en-au/downloads/mindstorms-ev3/software

20 March

Meeting 4:   **Night At The Museum. When History Comes Alive.**

Focus: **Coding, Technology**

Come to this afternoon's meeting prepared to step into a new and exciting world! You might have experienced VR headsets or AR excursions before but have you ever created an interactive reality of your own? There's a huge difference in the skill and knowledge needed to be a content creator rather than just a content consumer! The TechnoKids will be working with CoSpaces to bring the ordinary, humdrum classroom around them to life by adding 3D creatures to a 360-degree photo and then coding them to get moving all at once! You won't know where to look as you cast your eyes around at the 'wild ruckus' going on above your head and around your feet!

What to bring:

Each week please bring an A4 notebook and a well-stocked pencil case containing (at least) pens, pencils, a calculator and a ruler. Please also bring a hat, drink and snack for the break (no nuts please). ***You will also need a laptop each week.***

About Club Leader: Karl Easton

Karl is a passion advocate of all things STEM. His position as a primary school Digital Technologies Coordinator & Teacher sees him working daily in the area of robotics, coding and emerging technologies. Currently completing a Masters in STEM at Western Sydney University; he also consults and works with several educational organisations engaging new technologies. Karl believes in empowering his students with fun activities that inform, educate and motivate.