

The BRAINWAVES Club

Term 1 2021: Junior TechnoKids – Years 1 and 2

Venue: Alphington Grammar School

Term Fee: \$285.00

Animate Me!

In this term, Junior TechnoKids will explore the exciting areas of Animatronics and Mechatronics. Mechatronics is an interdisciplinary area that combines mechanical and electrical engineering with computer science. Animatronics is all about the creation of machines with the life-like qualities of animals, plants and even mythical creatures. Each meeting we will utilise engineering design processes and apply creativity, maths and science knowledge to our designs. We will use a variety of technologies and combine different materials, programs and structures to design and build programmable models of various creatures. Junior TechnoKids will practise observing and modelling animal behaviour and function. Throughout the term we will aim to answer a big science question: why do animals look and act the way they do, and how can we study and explain their looks and actions?

6 February

Meeting 1: Animate Me!

Focus: Animation : Stop Motion Studio

In this meeting the Junior TechnoKids will make a LEGO® animation by creating a frame-by-frame film with an iPad and the app Stop Motion Studio. Children will explore how to capture movement of people and animals and then how to create the impression of movement in inanimate objects. Each member will have an opportunity to be an animator, the person controlling the movement of the object, and a photographer/director, the person responsible for controlling the iPad and taking photographs. Having completed their short films, the Junior TechnoKids will put links to them in the Encephalograph. ***If your child has an iPad, please bring it along with the app [Stop Motion Studio](#) downloaded and installed.***

20 February

Meeting 2: Robo Roach

Focus: Programming : LEGO NXT and RCX

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 has revealed information which they have now incorporated into the world's first robotic cockroach. The scientists have discovered how the ingenuity of nature can point the way in developing technologies that could finally bring about a robot revolution. Using LEGO® NXT and RCX, TechnoKids will build a gear train and then attach legs and power up their design before programming their bug to crawl about the room.

20 March

Meeting 3: Grand Design Challenge

Focus: Robotics

Junior TechnoKids, here is your chance to get creative. In this session you will design a creature/animal for a rainforest adventure movie. The design must take into account characteristics that will allow your creature to live in a rainforest habitat. You will then make two models of your animal – a LEGO® model to show the animal's structures (its body parts), and a robotic model to show the animal's behaviours (how it acts). Touch and light sensors will be incorporated into the robotic model so that your creature can be programmed to react to light, touch and to its environment.

27 March

Meeting 4: Shark Attack - Game Design with Scratch

Focus: Programming : Scratch

Learn about the food chain by creating a fish tank game where a shark preys on the smaller fish in the tank. Your shark will be programmed using Scratch to try and catch these little fish and then gobble them up! Junior TechnoKids will learn about actions, reactions, sensors, triggers and controls in order to do this. There is a lot of skill involved and members will end up with a game that they can genuinely play. There are plenty of extension possibilities with this project like making an individual game controller, which uses the tilt sensors and motion sensors to improve the play.

What to Bring:

Each week please bring a blank A4 notebook and a well-stocked pencil case including;

- Pens and pencils
- Scissors
- Sticky Tape
- Good Textas
- Glue Stick

About the club leader: Mark Maxwell

Mark is an artist and workshop presenter. His practice encompasses marques, woodwork, building, animation, set design and lighting. When creating miniature models, he explores engineering principles and tries to design projects that promote open-ended creativity. Mark has completed an Art and Design degree and has worked as technical engineer in many theatres. He presents workshops for Regional Arts Victoria, which bring professional art practitioners to schools, community groups, art galleries, libraries and art festivals.