

# The BRAINWAVES Club

**Term 3 2021 | Junior TechnoKids | Years 1 and 2**

**Venue: Brighton Grammar School**

**Term Fee: \$285.00**

**Go, Go, Go...**

Do you like to know how things work? Do you love to invent and construct? Well then, TechnoKids is the club for you! TechnoKids will focus on all things cool and technical - robotics, electronics, programming, machine design and more! Using some great kits and other materials, members will create, construct, test and innovate as they investigate scientific principles and solve problems! TechnoKids members will learn to analyse, collaborate, persevere, take calculated risks and learn from their mistakes as they are challenged by some exciting design briefs.

**Meeting 1: From Little Things Big Things Grow**

**Focus: Variables and conditionals**

Little blocks build big programs! Hopscotch is a visual programming language designed to allow young programmers to develop simple projects by using drag and drop blocks of code to create scripts of which can be played when activated. In this session we will learn how to use individual blocks, conditionals and variables. We'll explore how to put them together in powerful ways to create some exciting programs.

*Please bring any model of iPad or iPad minis (unit must be clearly named and fully charged). Please download the app Hopscotch (free) from the App Store prior to the meeting. We will provide iPads for members who do not bring their own*

**Meeting 2: Wedo World Cup Soccer**

**Focus: Sensors and Tally sheet**

Do you love kicking a footy or a soccer ball in your backyard? Isn't it annoying when you are playing by yourself and there is no-one at the goals to block them so you can develop your kicking skills? Well, here is a 'solution'! In this meeting we will build and program a mechanical, motorised goal keeper that moves back and forth to block a paper 'ball' from the goal. This meeting will provide you with an introduction to robotics. You'll build LEGO models featuring working motors and sensors, connect them to a computer, and use a simple programming tool to program behaviour. Also, in this session members will build and program a mechanical leg that is motorized to swing and kick a paper ball at the goals.

**Meeting 3: Arched Bridge**

**Focus: Engineering principles**

Is it possible to build a bridge with no ropes or nails, which can be assembled in minutes? Today club members will learn about Leonardo's Da Vinci's bridge. Hundreds of years ago he devised a method for building a self-supporting arched bridge. TechnoKids will work in teams to create such an arched bridge. Let's see which team can make the largest and strongest bridge without it collapsing. After the team build TechnoKids will also be able to create their own bridge to take home and test with your family and friends.

**Meeting 4:        Gearing Up and down**  
**Focus:            Engineering, Fair testing and Variables**

In this first meeting TechnoKids will learn all about machines and gears. We'll discover how gears interact to vary torque and angular speed and build different gear assemblies to discover these effects. What do the terms "gear up" and "gear down" mean? TechnoKids will conduct a variety of tests and learn how to conduct fair test through a scientific process. We will look at a variety of Lego Wedo models that use gears and Technokids will explore how to make them go fast and slow.

**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.

**What to Bring**

- Students need to bring a well-stocked pencil case.
- A small note book or exercise book.
- A USB.