The BRAINWAVES Club

Term 3 2021| Einsteins |Years 3 and 4

Venue: Brighton Grammar School

Term Fee: $285.00

Scientrific!

Science is exciting – it helps explain the world as we know it and it provides us with a methodology to enhance our understanding of every aspect of the universe from the micro to the macro level. Highly able children are naturally curious - their search for knowledge and meaning, and their engagement with abstract ideas is well suited to the exploration of all areas of science, technology and mathematics.

The Einsteins club program offers a smorgasbord of hands-on learning across a range of sciences including physics, chemistry, biology, meteorology, astronomy, earth science and more, as well as some mathematics sessions. Along the way children will also have the opportunity to think and work like a scientist, proposing and testing their hypotheses via experimentation, observation and modification. Extending and challenging members' thinking is paramount.

Meeting 1: **Runaway**
Focus: **Kinetic and Potential Energy**

There's an important rule in physics: Energy can't be created or destroyed; it only flows from one place to another. In this session, we will be exploring kinetic and potential energy sources, seeing how energy can be redirected, and using this knowledge to design and build a marble run. You will be expected to make predictions and critically think about what you observe, link it to the scientific principles and then apply it to your design. Will your marble make it all the way to the end?

Meeting 2: **Paper Engineering**
Focus: **Using origami to examine engineering.**

Our devices and machines are being designed to fit smaller and smaller spaces. What does the ancient art of origami have to do with space satellites? We'll be looking at how folding paper can direct the flow of energy and forces to support heavy objects. And together we'll learn some basic folds to build a giant geometric ball entirely out of small squares of paper!

Meeting 3: **Electric Spinners**
Focus: **Basics of electrical circuits. The relationship between electricity and magnetism. Putting it together to create an eclectic motor.**

Electricity is an invisible form of energy. Magnetism is an invisible force. Put them together and we can make an electric spinning thing we call a "motor". Electric motors are everywhere in our modern world, and in this session we'll be looking at why they are so useful, and what makes them spin. Using some engineering and a little something known as "Lenz's Law", we'll create our very own eclectic motors.

Meeting 4: **Air Pressure Energy**

Focus: **Newton's third law of motion. Making simple rockets from pipettes. Launching water rockets using a bike pump.**

It's time for lift-off! We'll be looking at air pressure, and how we can use it to store enough energy to launch a rocket into the sky. Along the way we'll explore what pressure is, how we can use it to direct energy flow, and how high it could make a rocket fly. This session includes Newton's Third Law, gravity, and water rockets.

About the club leader: **Sean Elliott**

Sean M Elliott is a writer and educator who has been working in science communication since 2001. He has written and presented education sessions for schools and community groups, and has worked for groups such as Museum Victoria, CSIRO, and Edinburgh International Science Festival. Sean has worked on science television shows, including scripting "Physics House" on ABC TV, and as a segment producer on "Scope" on Network Ten. He regularly runs holiday programs and science club events that have a strong focus on STEM skills. Sean lives in Melbourne with his son, and his favourite planet is Saturn.

What to Bring:

- A well-stocked pencil case (this includes grey lead pencils, coloured pencils, coloured textas, sharpener, eraser, ruler, scissors & glue stick)