



A G.A.T.E.WAYS JOURNEY

for gifted Year 1 and 2 children

with a love of science

A SHOCKING DISCOVERY!

G.A.T.E.WAYS is an independent organisation offering challenging and enriching activities and experiences to develop and extend highly able children. Established in 1994, G.A.T.E.WAYS runs a range of stimulating school programs as well as the *Saturday Brainwaves Club*. This *JOURNEY* for both girls and boys will run over four sessions.

Charlie and Annie were having fun at their neighbourhood park when the sun disappeared behind a bank of threatening black storm clouds. Suddenly a flash of light lit the sky, followed by a distant rumble of thunder. Expecting a downpour, they sprinted back to Charlie's and rushed up the stairs, just in time to see a huge streak of white light illuminate his bedroom. "Woah... how did that happen?" they both exclaimed. Imagine their surprise when a tiny, glowing creature replied, "My name is Bolt, and I know. Would you like me to explain?"

Join Charlie, Annie and their strange little friend Bolt on a journey of discovery as we explore the relationship between electrostatics, electricity and magnetism. Be prepared for heaps of exciting activities! There will be investigations and experiments at every turn, sparking our scientific, inquiring minds.

Session 1 - The Shock Factor

As they watch the storm's unfolding drama, Annie notices that sometimes the lightning appeared to go between the clouds whilst at other times it struck the ground. Luckily Bolt was able to explain that lightning is caused by an electrostatic discharge, either between the clouds or between the clouds and the earth. "It's all to do with little particles called electrons," he added.

Join Bolt, Charlie and Annie as they discover the world of electrostatics and electrical charge. We will investigate how lightning works and perform experiments and magic tricks with static electricity. We'll have fun making a snake dance, making our hair stand on end, making beans jump for joy and making water bend! Along the way we'll help Charlie understand that lightning is not so scary after all.

Session 2 - Shine Brightly

Suddenly, after a tumultuous bang, the room went dark- the power had gone off! Bolt, being a sensible streak of lightning, came up with a plan to see if they could find a candle and some matches. But all they could find were some old wires, a lightbulb, batteries and some paper clips. Bolt started to glow (he likes to do that, when he has a good idea) and suggested that they build a circuit to light up the bulb and shed some light on the problem!

Let's help Annie, Charlie and Bolt in their endeavours. In our *Electricity Laboratory* we will build a number of series and parallel circuits and test different materials to see if they conduct electricity. Once we get started, we will amp up the fun, using our knowledge to design strange and wonderful circuit experiments!

Session 3 - The Force is with you.

The storm was moving away and as the rumble and crackles faded, the children sat chatting. Charlie wondered how people saw at night before electric lights and gas lamps. Annie thought about sailors travelling at night and wondered how they knew where they were going. Bolt started to glow again. "They used the force, or should I say the field". He explained how the earth's magnetic field could be used to move the needle on a compass so that travellers could work out their direction of travel.

This session we will explore the world of magnets. Magnets are all around us in electronic devices, modes of transport, door locks, alarms and compasses. Through hands on activities, we we'll discover how magnets work, we'll investigate magnetic fields and design our own compass.

Session 4 Connections

Hurray, the power was back on. Although Bolt was starting to fade, he was keen to explain one last thing. "Did you know that there is a connection between electricity and magnetism?" he asked. In our last session Bolt will explain this connection. During this session we will combine all the knowledge we have gained about electricity and magnetism and put it to good use. We'll have fun making an electromagnet and a magnetic propulsion system, bringing our Journey to an end – until next time

Homework Requirements and Assessment

Homework may be set after some sessions.

Assessment will be based on student's participation in each session. At the end of the program, a short, written report will be completed and forwarded to parents.

What to bring

Please bring a labelled, small photograph of yourself, a snack (no nuts please), a stamped, self-addressed DL envelope for your report (write your name on the back) and a well-stocked pencil case, (pencils, eraser, ruler, scissors and a glue stick). If attending the program in Terms 1 or 4, please bring a hat.

About the Presenter

Alison Brennan is originally from the UK. She has an Honours Degree in Biology and is a qualified secondary science teacher with many years teaching experience. Alison has had many leading teacher roles and has also been a Year 11 Assistant Head Co-Ordinator for Gifted and Talented Science programs. Alison is passionate about science education and is excited to share her love of learning through G.A.T.E.WAYS. Alison has four children of her own, from Kinder to Year 8.