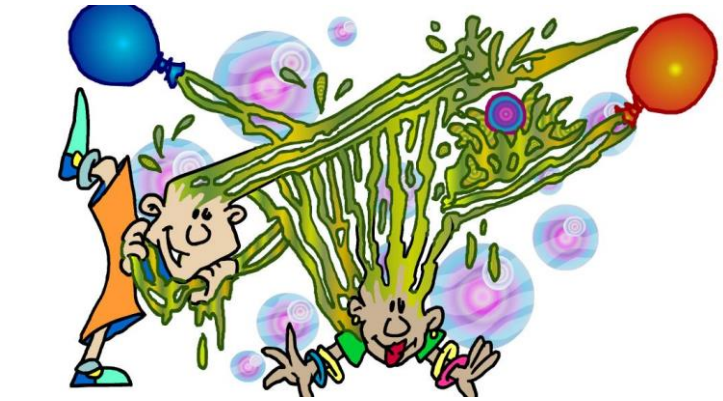

A G.A.T.E.WAYS JOURNEY

For Year 1 and 2 gifted children

with a love of science

'Calling All Sillyologists!'

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 and will combine lots of really fun theory and experiments with some very, very serious science and mathematics!! Do you love playing with bubbles, balloons, experimenting with slime and eating jelly? Are you curious and do you love a challenge? If the answer is yes, come and join our sillyologists in the lab!

This program will introduce children to scientific method including how to design and improve experiments, how to make predictions and use observations, how to use variables and how to tell good science (as performed by Dr Splatt) from bad science (as performed by Professor Plop). Practical experiments will see children acting as real scientists, assisting them to understand what scientists do on a day to day basis. For example, we'll use careful and considered methods over the weeks to find the very best bubble mixture and to carefully compare the results of our different mixtures in tables. Scientific thinking can make for some really silly fun!

Session 1: Balloonology

Everyone loves brightly coloured balloons. They represent fun times and celebrations, but you will be amazed by how much awesome science you can learn from these simple playthings! Our first session centres on science that can be demonstrated with balloons such as the pull and push of static electricity, the strength of air pressure and the magical science of putting a skewer all the way through a balloon. We will make two different balloon-powered hovercrafts. The air in each of the hovercrafts will flow out of the balloon in a slightly different way. Can you (with the help of Dr Splatt) compare the two different designs in a fair way so that the design change is the only part of the hovercraft which could have caused the difference? You will need to consider how the tricks and unfair tests set up by Professor Plop could make the better design seem like the bad one.

Today we will as setting up our first batch of bubble mixture to test next week. Our different mixtures will contain different amounts of water and detergent. We will have to wait a whole week to test and compare out mixtures.

Session 2: Jellyology

Today is all about the science of wibbly wobbly jelly! At a basic level, jelly can help us learn about states of matter - solids, liquids and something in between. We'll be testing how some enzymes can affect proteins in jelly and how they bond or hold together to make the jelly solid. Jelly can also bend light and change the way we see things. Can we make jelly into a magnifying glass? We'll use jelly made with different amounts of water to compare how a marble can travel through the jelly and investigate forces like the centrifugal and centripetal forces. Dr Splatt might have some suggestions as to how to compare the jellies as we spin them. As well as our jelly activities we will test and improve our next batch of bubble mixture, carefully recording results in our science logbooks.

Session 3: Slimeology

It oozes between your fingers when you pick it up, yet doesn't stick to your skin. It comes in a variety of colours, often in a green goopey mess! At times it acts like a liquid, but at other times it appears to be a solid. What is this strange substance? If you guessed slime, you are 100% correct! Today we make slime, not just because it's fun but also because it lets us explore the idea that everything is made of molecules and the shape and interactions of these molecules change how a substance feels. Different slimes have different properties and we will carefully compare these different types of slime. Some slimes are more like a solid to start with and ooze their way into being a liquid mess after a little time. Another slime can self-syphon and pull itself around once it's moving. It's all about the molecules!

Session 4 - Bubbleology

There's something incredible about a bubble. It's just a little puff of air trapped inside a thin film but its precise spherical shape and beautiful, swirling colours make it a true wonder of science! Today we'll explore the physics of bubbles – what makes them stay together, what surface tension is, and a bit about volume and elasticity. We'll also learn some interesting bubbly mathematical rules, for example rules related to when bubbles join to form different shapes in different three-dimensional bubble wands. Today Dr Splatt and Professor Plop will also discuss how experiments and scientific thinking can be used in our everyday lives to test things the reliability of things like horoscopes.

Over all four weeks we have attempted to invent a recipe for the best bubble mixture by carefully comparing different mixtures at different times and recording the results in ordered tables in our science logbooks. Have we found the perfect bubble mix? Just how big can we make our bubbles? With our perfect mixture and our perfect bubble wand design you will be amazed at just how big the bubbles can be. You might even fit inside!

Parents PLEASE NOTE:

Some of the sessions involve food science and we will be eating small amounts of jelly. If your child has a dietary requirement that would stop them from eating jelly, please let us know. We will also be using balloons so please advise if your child has a latex allergy. If your child has severe allergies, this program may not be suitable for him/her.

Homework and reporting

There may be some homework between sessions. After the program, parents will receive a short report about their child's progress and participation.

Requirements

- We love to recycle, so if you happen to have old CDs / DVDs and pop-top lids please bring them to the first session
- Bring a nut-free snack as well as a well-stocked pencil case and notebook to each session
- In session 1, bring a stamped, self-addressed DL envelope (for the report) and a small, labelled photograph of your child.

ABOUT THE PRESENTER

Emma Carter studied Mathematics and Physics at the University of Melbourne. She has taught secondary school maths up to VCE. She has also worked at Scienceworks, and as an outreach education officer for the Discovery Science and Technology Museum. Emma has been presenting science and mathematics workshops with G.A.T.E.WAYS for many years.