



A G.A.T.E.WAYS JOURNEY

for gifted Year 5 and 6 children

with a love of science

EMERGENCY ON FLIGHT 999!

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.

Aerostar Flight 999 took off at 11.23pm bound for London, England. About twenty-five minutes into the flight an alarming situation began to unfold - five passengers had already become acutely unwell. More and more passengers and crew were starting to report the same symptoms. After contacting the control tower at Melbourne's Tullamarine airport, the captain is granted permission to return to the tarmac. What is to be done about the emergency?! As scientists working for the Department of Health, you and your colleagues have been rushed to the scene to investigate. It's a race against time to find the cause of the illness and try to contain its spread!!

Come and join us for a hands-on adventure that involves lab work, forensic skills, collaboration, teamwork and whole lot of fun!

Session 1 - Emergency! Emergency!

At 1.25 am the wheels screech down onto the tarmac. Affected passengers and crew are immediately quarantined at the airport or rushed to the city hospital. Paramedics are waiting to take detailed histories of the various patients' symptoms and recent movements. Some of the passengers and crew have been suffering from severe vomiting and diarrhoea. The press has caught wind of the situation and have shanghaied passenger Mary Robertson for comment as she was being stretchered into an ambulance. She had been on her way to her mother's 100th birthday and was acutely distressed with severe stomach cramps.

Now *our* work begins in earnest! Grab your lab coats and gloves and get ready to enter the **zone of contamination**. Today we start our forensic investigation to recreate the unfolding drama. We'll look at the timeline of reported symptoms, how meals were produced and served, hygiene measures followed and speculate about how the illness spread so rapidly. We'll review doctors' reports and initial interviews with some of the sick passengers and crew.

Put on your critical thinking cap on! It is possible that some of our leads may be false, and some of the early reports may not be wholly reliable. It's our job to get to the truth about the source of the outbreak.

Session 2 – Microbe alert

It is just 24 hours since Aerostar Flight 999 was forced to turn around, but already the airline is in panic mode. Passengers are cancelling their flights, rumours are circulating on Twitter and accusations are flying. Something must be done to limit the damage... and fast! We know the source of the infection... maybe finding the microbe responsible will help? Let's get onto it before the situation gets any worse!

The initial press interview with Mary Robertson has whipped up a storm. Two more passengers have come forward to sell their stories to the media, some are threatening to sue, and the airline wants this shut down fast. Maddie Griffiths, a passenger in economy claims she nearly died of dehydration following Aerostar Air's 'negligence'. Prior to boarding Adrian Williams had been attending a conference in the city and claims he is still too unwell to return to work.

Today, we'll investigate a range of microbes to identify which one was the culprit. There will be lots of hands on lab work as we swab the plane's interior for evidence. We'll plate and grow bacteria and fungi as part of this delicate operation. After looking at our pathogens in detail, we'll need to prepare an "initial press release" to give the public the true story and put their fears to rest.

Session 3 - Take up the fight

Our initial press release has been well received. Aerostar is happy that some false information has been disproved and that the rumours have been dispelled. But how are the patients doing? Have they been released from the hospital's quarantine ward? Are some passengers still planning to sue the airline or are they finally happy that the airline's response to the emergency? In a bit to avert legal action, we must issue an apology and agree on some sort of compensation.

Now comes one of our most important pieces of work – ensuring that a similar outbreak doesn't happen again! By the end of today's session, we are due to front the Airline Disaster Investigation Bureau with our recommendations for disease prevention/control on long haul flights. In order to do this, we'll investigate the action of antibiotics, antivirals and antifungals. We'll examine the growth rate of bacteria, various antibacterial soaps as well as antibiotics and their effects. We will specifically look at penicillin and how it could be useful in this investigation. We'll explore fungi too, working with yeast and participating in some seriously exciting experiments. Viruses come in all kinds of interesting shapes and sizes and we will make our own model viruses. Along the way we'll discover which medication and medical advice will be the most useful in such cases.

Session 4 – Back in control

Things are now under control. We have discovered the source of contamination, the microbe responsible and we have controlled the outbreak. However, what should we do if it happens again? What preventative measures could be taken to avoid a similar event on a plane, a train, a hospital, or even a cruise ship? During this concluding session, we will review the results of our antibacterial experiment, examining the zone of inhibition using statistical analysis. The results will help us form an emergency plan that could be used in any confined space. To test out our emergency plan, we will use a hypothetical scenario, "SHIP SCAPE". 'The Golden princess' is in lockdown, halfway between Melbourne and Adelaide. Forty-three passengers are ill with suspected food poisoning. You'll need to put your scientific knowledge and our emergency plan into practice. Can you escape the SEPTIC SHIP?

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 and year level on the back) and a well-stocked pencil case, (pencils, rubber, ruler, scissors and a glue stick) and a notebook. If attending the program in Terms 1 or 4, 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 and Head of Biology. 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.