



A G.A.T.E.WAYS JOURNEY

for gifted Year 5 and 6 children

with a love of science and magic

'The Great Balthazar's Amazing Bag of Science Tricks'

G.A.T.E.WAYS is an independent organisation offering challenging and enriching activities and experiences to develop and extend highly able children. This *JOURNEY* for both girls and boys will run over four sessions.

Can you tell the difference between a magic trick and a scientific principle? Magicians have been amazing audiences for centuries with new 'tricks' employing scientific ideas in a non-conventional manner. Although a magician never reveals his secrets, the whole *point* of being a scientist is explaining ideas, and every magic trick can be explained if the right ideas or principles (usually from chemistry or physics) are identified. Enter the world of magic to discover firsthand how magicians use science to create some awesome magic tricks. Watch in amazement as science creates magic right before your very eyes!

This Journey will teach you how to perform some mind-boggling 'magic' from The Great Balthazar's bag of tricks. You'll also learn about the science that makes them possible. In this collection of tricks, "magic" is "science" and "science" is "magic"!!

Session 1: How We See Things: The Vanishing Glass Trick

Poof, in this first session the Great Balthazar will make a glass tube vanish before your very eyes, claiming to have turned it invisible. But is invisibility really possible? Or is there more to this trick than the eye can see? In order to answer these questions, we will need to have a closer look at how it is that we see things in the first place, and learn a little more about the properties of light and how light changes as it moves through different materials.

Session 2: The Magic of Magnets: The Mystifying Missile Trick

Watch as the Great Balthazar takes a simple steel ball and turns it into a missile launched with unbelievable speed, with no visible signs of a force to launch it. Is it really a 'magic' ball, or is he hiding something? The answer may lie in the incredible power of magnets. In this session we will learn more about forces and how they work as we investigate magnets and the types of material they respond to. We'll also discover a way in which magnetic forces can be magnified through the use of multiple magnets.

Session 3: Electrical Stickiness: Telekinetic Cans Trick

The Great Balthazar claims to have amazing mental powers, including the ability to move objects with the power of his mind. Awesome! Watch as Balthazar causes a drink can to roll across a table without touching it. This astonishing power is called telekinesis, but does it really exist and does Balthazar have it? Or has he pulled the wool over our eyes once more? This session we'll explore electrical forces and how to create them as well as the conditions required to recreate Balthazar's so-called mind powers.

Session 4: States of Matter: The Vanishing Spoon Trick

Balthazar's final trick involves making himself a cup of tea. During this seemingly everyday activity, he makes his teaspoon vanish into his cup, apparently gone for good!! How is this possible? Is he up to his old invisibility tricks again? To answer this, we will investigate some of the properties of matter and how they respond to changes in temperature. What happens when matter is heated up? What about when we cool it down again? Our investigations will uncover exactly what happened to Balthazar's spoon and we we'll also find out whether or not he can ever get his spoon back.

Homework and Reporting.

You may be asked to complete some homework between sessions.

REQUIREMENTS: Please bring a notebook (A4) and a well-stocked pencil case each week. Please also bring a stamped, self-addressed DL envelope for your report and a small, labelled photograph of yourself to Session 1. A snack will also be needed each week (no nut products please).

About the Presenter

Simon Matheson is a physicist by training and has been involved in education one way or another for most of his life; first as a student, then as a secondary school science and maths teacher, and most recently as a developer and presenter of science outreach programs with CSIRO Education. Simon's enthusiasm for science education is grounded in the belief that all citizens of the modern world need a firm grasp of the principles upon which science (and, by extension, the world around us) are built.