G.A.T.E.WAYS

invites Year 1 and 2 children

with a love of science to

'The Sounds of Science'

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. The aim of the ***Sounds of Science*** journey is to encourage an interest and enthusiasm for science, in particular physics, as well as to learn some basic principles of acoustics. The journey includes many hands-on activities and experiments where the students will be using a wide variety of equipment and props to explore the concepts. These activities have been designed to promote the children's investigative and reasoning skills as well as develop a basic understanding of the principles and concepts involved. Their inquiring minds will be put to work!

Session 1 Good Vibrations

A sound - what is it? How are sounds made? How do sounds travel from here to there? Can sound bounce off walls? Can sound travel in empty space? Why do some noises seem louder in a room than in the open air? To answer these questions *and more* we must first learn about the features and characteristics of waves. We will discover that waves do two important things - carry energy and carry information.

Session 2 What beautiful music

In this session we will learn what pitch, frequency, and loudness means to a scientist. When an object vibrates, it makes a sound wave. Different objects vibrate at different rates and produce sounds of different pitch. You will investigate to determine what produces a high-pitched sound and what produces a low-pitched sound. We will learn how musical instruments are designed to make sounds louder by making some instruments of your own.

Session 3 Can You Hear Me?

This session investigates the workings of the human ear. How does the ear work? How do we get the message? We will look at the inner workings of the ear and learn about the important features and how the all fit together so we can hear. We will learn how the ear picks up the sounds waves and sends the messages to the brain where it is interpreted as sound.

Session 4 Sounds at Work

We will investigate the way in which we use sound and waves in our everyday lives. We will look in some detail at radar and ultrasound. We will also consider how the bionic ear (cochlear implant) works.

Work requirements & Assessment

Children may be asked to complete some homework between sessions. At the end of the program a short written report will be completed on each student and forwarded home to parents.

ABOUT THE PRESENTER

Emma Carter has Bachelor degree in science, majoring in Physics and Electrical Engineering from the University of Melbourne. She has taught secondary school maths, science and physics and has worked at Scienceworks and the Discovery Science and Technology Museum. She has presented a wide range of science and maths workshops for G.A.T.E.WAYS.