A G.A.T.E.WAYS JOURNEY

for curious gifted Year 1 and 2 children

with a love of hands-on science

'A Watery Adventure with Xergle and Zork'

G.A.T.E.WAYS is an independent organization 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.

Water is found everywhere on Earth, from the polar ice caps to warm tropical seas. Wherever water flows on this planet, you can be sure to find life and where there is no water, life struggles to survive. Why is water so crucial for life? Come with us on a bubbling, stirring, splashing journey as we investigate water's amazing properties and discover how they result from the ways in which the molecules, which make up water, interact with each other. Experiment with water and all kinds of everyday chemicals, make solutions, crystals, boats, running streams and water wheels and develop a deeper understanding of what water actually is.

Session 1: Wet and Wonderful

The planet Calidon is in trouble: its inhabitants are ailing and its plant life is withering in the intense heat. The Old Ones have called a meeting and summoned space explorers, Xergle and Zork . "It is written in the Book of Truth that on Planet Earth there is a substance called water, which is better at sustaining life than any other substance. Your mission is to travel to planet Earth, investigate this substance, make detailed notes and return to Calidon with your findings." Xergle and Zork have landed and await our help to investigate water and record its properties as a solid, liquid and gas. We unravel the mysteries of change of state, surface tension and diffusion. We even lift up an ice-cube with a piece of string.

Session 2: What's the Solution?

When Xergle and Zork get their first glimpse of the ocean, they can hardly believe their eyes. So much water! What they do not know is that sea water is salty and in its untreated state is unsuitable for drinking by humans as well as most plants and animals. We see what happens when plant cells are exposed to too much salt. We make a salt solution and document the changes which occur. We test substances for solubility. We make saturated and supersaturated solutions, discover what causes substances to be suspended in water and see what happens when particles settle out. We make crystals and examine their structure.

Session 3: Whatever Floats Your Boat

"What's that spaceship doing in the water?" asks Xergle. "It's not a space ship," we explain, "It's a boat and it is floating." We conduct an experiment to answer Zork's question: "Do all things float?" and determine what causes some things to float and others to sink. Can objects float at different levels in water? We make sinkers float and floaters sink. We have a competition to see whose boat can carry the most passengers. Do things float better in fresh or salt water? We conduct an experiment to find out. Would the same thing happen with other solutions?

Session 4: Making Waves

As Xergle and Zork stare fixedly at the ocean, it becomes apparent that the water is moving. We demonstrate how moving water molecules can form gentle waves that wash onto the shore or pounding surges that carve the coastline. We make a model landscape and see how water causes erosion and floods the land. We use the energy of moving water to do work, such as turning a water wheel. We see water climbing up small spaces in capillary action and see how capillary action is not only useful in our everyday loves but also vital for plants to survive. By now we have accumulated a huge amount of information about water and its properties for Xergle and Zork to take back to planet Calidon. The Old Ones should certainly be pleased with such a successful mission.

Homework Requirements & Assessment

Homework may be set after each session to give students extra time to explore the new concepts. At the end of the program a short written report will be completed on each student and forwarded home to parents. A copy should be made and forwarded to the school.

What to bring: Please bring a labelled, small photograph of yourself; a snack (no nuts please), and a stamped, self-addressed DL envelope for your report. (Write your name on the back.)

About the Presenter

Maureen Frith has a Bachelor of Arts Degree, a Diploma of Teaching and a Graduate Certificate in Gifted and Talented Education. She has taught for 45 years in both Primary and Secondary schools and has performed the role of Coordinator in Science and Technology, presenting enrichment and extension programs for students and professional development for teachers. She has helped to develop curricula, including VELS Science and Thinking Skills documents. She is an active member of the Science Teachers Association and the Science Talent Search Committee. For many years she has been a club leader for the G.A.T.E.WAYS Brainwaves Club. She encourages students to be active enquirers, develop higher order thinking skills and to share their knowledge and appreciation of the amazing universe in which we live.