GATEWAYS JOURNEYS

G.A.T.E.WAYS invites high-ability Year 1 & 2 students with a love of sea creatures and the ocean environment to …

Octonauts to the Rescue!

The Octonauts need your help. They have recruited you to complete four special missions to protect the precious ocean environment and the creatures who live there. Oceans are very important to our planet, but we have only studied a tiny part of these huge bodies of water. Did you know that we have actually explored more of space than our oceans? Our oceans provide us with the fish we eat, oil to make petrol for our cars, and even seaweed extracts for making ice cream. The oceans provide a highway for ships and an underwater playground for scuba divers. Living oceans absorb carbon dioxide and pump out oxygen for plants, animals and humans to breathe.

One of the most famous underwater environments in Australia is the Great Barrier Reef, which is the largest reef system on Earth. Octonaut scouts have noticed that the reef has been invaded by the crown of thorns starfish. These starfish are eating the coral. As a budding scientist and tech 'wizard', the Octonauts need your help to build and program robots to explore the reef and find ways to protect the coral and other creatures from this deadly invader.

Requirements:

- Bring a plastic pocket book to hold handouts, a pencil case with a ruler or measuring tape, and lunch or a snack as required (no nuts please).

Session 1: Heavy Sea Sailing

It's all hands on deck as we begin our first mission to design and build a research ship for the Barrier Reef Octonauts Task Force. You'll look at different sizes, shapes and building materials for ships to select the best kind for your mission. Your boat will need to be large enough to carry research equipment and Octonauts scouts, but small enough to be pushed along by the available motor. Using the LEGO WeDo™ construction set and software, you will design and build your boat, and report back to Octonaut command. During this session you will also learn about the amazing living creatures that make up coral reefs, and find out about reefs in other parts of the world.

Session 2: Diving into Action

Join the Octonauts on an underwater mission. Dressed in a wetsuit and scuba tanks, you can get up close and personal with the coral and the hundreds of turtles, fish, dolphins and other animals that call the reef home. On this mission you will build a Lego scuba diver from scratch. Your next task will be to learn how to steer your diver through the water and use her robotic arms to grab a poisonous crown of thorns starfish off the reef. After you have captured the starfish, we will learn about what these creatures are, and how they are damaging the Great Barrier Reef.

Session 3: A Reef in Trouble

Alarm bells are ringing!! The numbers of crown of thorn starfish in the Great Barrier Reef has reached dangerous levels and we need to find a way to control them, and fast! On this mission, you and your team have been asked to design a remote controlled submarine, called a bathyscaphe, or bathy, so you can get equipment to the reef to try and get the starfish under control before they do more damage. You will have to decide how fast the bathy's propeller needs to rotate, and you will also have to add claws to the bathy so that you can deliver the equipment to where it is needed. Once you have finished your mission, we will learn about the ways that scientists are controlling crown of thorns starfish in an effort to save the reef.

Session 4: Shark Rescue

During your bathy exploration, you spotted an injured grey nurse shark. Help save this endangered creature! You may be frightened of sharks, but in spite of their sharp teeth and large bodies, grey nurse sharks have a gentle nature. The grey nurse shark and other large fish are often in danger from fishing, and can get trapped and killed in beach safety nets. On this mission, you will locate the injured shark to give her medical attention. In order to try and attract the injured animal you have decided to build a realistic model of a grey nurse shark that can be programmed to open and close its mouth. To make your model more convincing, you will also create a programmable pilot fish to clean the shark's skin. You will program an ocean adventure using your model with sound, action, and background effects. Will you save the shark? In this session aside from our model building and programming, we will learn about grey nurse sharks, why they are endangered, and how they are being protected.

Homework:

Before coming to the program see if you can find out the answers to the following questions. Bring your information with you:

- What are Coral Reefs?
- What are they made of?
- How long do reefs take to form?
- What animals / plants live in Coral Reefs?

About the presenter:

Mark Maxwell is a multimedia artist, mathematician and workshop presenter. His creative practice encompasses creating robots, building marques, programming animations and lighting sequences. Mark has completed an Art and Design degree as well bookkeeping (accounting) where he has learnt to program many mathematical formulas and processes. He presents workshops for Regional Arts Victoria, which brings professional art practitioners to schools, community groups, art galleries, libraries and festivals.