

Reef HQ Education



Teaching Unit

Caring for the Reef

Early Years & Primary

In this Reef HQ Education Program students will investigate the natural and human components of the Great Barrier Reef. They will identify interactions that take place between the Great Barrier Reef and themselves, and will explore environmentally friendly actions they can initiate to help protect the reef.

Curriculum Links

Completing this Reef HQ Education Program will develop students' ability to:

- Match relationships between themselves and the Great Barrier Reef;
- Make simple connections between certain elements of the Great Barrier Reef's ecosystems;
- Organise and present information about the Great Barrier Reef;
- Describe the relationships between personal actions and environmentally friendly strategies on the Great Barrier Reef;
- Predict possible consequences for the Great Barrier Reef when an element is affected;
- Understand that the Great Barrier Reef provides resources that meet our needs and students can conserve resources;
- Identify consequences of following and not following rules on the Great Barrier Reef;
- Discuss their thinking about needs of living things on the Great Barrier Reef;
- Group Great Barrier Reef animals and plants based on observable features; and
- Observe and describe components of Great Barrier Reef environments.

The following unit includes suggestions for activities that can be completed before and after your Reef HQ visit.



Australian Government
Great Barrier Reef
Marine Park Authority



Reef HQ is the education centre for the Great Barrier Reef



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Reef HQ Visit

This teacher resource is linked to a class visit to Reef HQ. The Reef HQ visit will enable students to:

- Investigate the relationship between themselves and the Great Barrier Reef;
- Discover the needs of Great Barrier Reef inhabitants; and
- Explore simple connections between animals and plants and their environment.

Theme Overview

The Great Barrier Reef is under pressure and what we do on the reef, along the shore and even on the land, effects this diverse and fragile ecosystem. The plant and animal communities that make up the Great Barrier Reef need to be protected.

The Great Barrier Reef

Imagine a place so large, it can be seen from a spacecraft orbiting the earth! The Great Barrier Reef stretches for more than 2000km along the northeast coast of Australia. Comprising more than 2900 reefs, some 940 islands and surrounding waters, the Great Barrier Reef is the largest natural feature on the earth.

Pressure on the Great Barrier Reef

The Great Barrier Reef we see today is about 12,000 years old, and for most of that time there has been minimal human presence. Around 1850, European settlers began populating and developing the Queensland coastal strip, along the inner boundary of the Great Barrier Reef. During that time, human settlement has impacted the Great Barrier Reef. Nowadays, the water isn't as clean, the coral isn't as healthy, there are fewer fish and some animals and birds aren't as common as they once were.

What are some of the things being done to help care for the reef?

- All boats that use trawl nets within the Great Barrier Reef Marine Park must have devices on board that reduce the amount of fish they catch that they don't want, and that prevent them from catching turtles in their nets;
- All boats in the commercial prawn fleet must be fitted with satellite tracking devices, to show their location on the Great Barrier Reef;
- Tourist tickets include an environmental management fee, so a portion of the money made from the tourist trade goes straight back into research for the Great Barrier Reef;
- Limits on tourism permits have been introduced in some highly used areas;
- Agricultural 'Best practice' codes have been created to address environmental problems caused by industries such as sugar, dairy, horticulture, cotton and aquaculture.
- The agriculture industry is working with the Great Barrier Reef Marine Park Authority to encourage farmers to adopt sustainable farming practices;
- There are new policies for protecting particular animals, including: 16 dugong protection areas; a comprehensive whale and dolphin policy for the entire Great Barrier Reef; and a turtle conservation policy is being implemented; and
- The Great Barrier Reef Marine Park Authority's "Representative Areas Program" will protect areas of the Great Barrier Reef that 'represent' different habitats and animal and plant communities.



Caring for the Reef – Activity Ideas

Tuning In

Stimulus Materials:

- Read the *Big Picture Book of the Great Barrier Reef* by Steve Parish;
- Use *Exploring the Great Barrier Reef* by Eureka Multimedia 2000 or Webster's *Great Barrier Reef software* to explore the reef on CD-ROM;
- Read *The Magic School Bus on the Ocean Floor* by Joanna Cole;
- Read *Scuba Divers and Their Under-water Friends* by S. Swartz;
- During the course of the unit ask students to collect any information from television, radio, newspapers and magazines about the Great Barrier Reef;
- Have children find information about the Great Barrier Reef on the Internet or in books, magazines etc;
- A – Z of the GBR - Make a list of reef-related terms beginning with a different letter of the alphabet;
- Read and discuss picture books, fiction and non-fiction materials with a sea or reef setting;
- Watch videos related to the Great Barrier Reef and the Ocean;
- Provide time for students to explore CD-ROMs; and
- Visit Web sites related to the sea and the reef.

Discuss

Ask the students what the Great Barrier Reef means to them. Initiate discussions regarding features of the Great Barrier Reef and what the Great Barrier Reef Marine Park includes. Use an atlas to show the size of the Great Barrier Reef and the Great Barrier Reef Marine Park.

Picture Gallery (electronic imaging)

Using the *GBR Explorer* and *Visual Library* as stimulus sources. Print out images of the Great Barrier Reef from the Reef ED website:

GBR Explorer

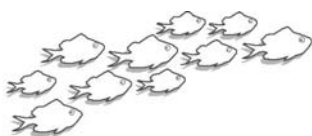
<http://www.reefed.edu.au/explorer/>

Visual Library

<http://www.reefed.edu.au/library/index.html>

Ask students to bring in photographs or books with pictures of the Great Barrier Reefs' islands, animals and plants. Discuss features of the Great Barrier Reef such as:

- Size;
- Types of animals found;
- Types of plants found;
- Areas for boating, fishing, visiting, and other recreational activities; and
- Areas they enjoy visiting.



Sharing Circle

Have students discuss their personal experiences of the Great Barrier Reef or other reef experiences and items of interest in a sharing circle. Use a 'speaking conch' or other shell. Whoever has the shell contributes, while the others listen, ready to ask questions.

Preparing to Find Out

Questions...Questions...Questions

During the unit, the students will ask many questions. Talk with the students about the many ways to find the answers including looking, asking and experiencing.

Discuss the people or places that might help them find out the answers to their questions. These may include Reef HQ, teacher/librarian, expert, parents, Internet or books.

Discuss some of the questions students have. Collate into a table form then give them time to find out the answers.

During the course of your unit encourage students to add to the table.

Our Great Barrier Reef Questions

Questions	Where do we find out the answer?	How?	Answers
What colour is an octopus?	Reef HQ	Look/Observe	An octopus can change its colour!
Why does a sea snake have a tail like a paddle?	Large container of water	Experience	So it can push itself through the water like a sideways facing flipper.
What is the largest shark in the world?	In a book or ask an expert	Look or Ask	Whale Shark

Relationships

Read *A House for Hermit Crab* by Eric Carle. Discuss the relationship between the crab and its shell. Ask students if they know of any other relationships between a living marine animal and something that is not alive. Students may wish to suggest other homes that animals rely upon including rocky crevices, caves, seagrass and inside shipwrecks.

Explain to the children that animals may have relationships with other animals that are important for their survival. Examples could include:

- A goby and alpheid shrimp. Gobies have good eyesight and are very alert. The shrimp however has poor vision but remains in contact with a goby by using its long antennae. Should danger threaten, the retreating fish alert the shrimp and they all retreat into the burrow. In return, it is the role of the shrimp to do most of the making and maintenance of the burrow.
- The Cleaner wrasse and reef fish. Cleaner wrasse, eat parasites that are found on the bodies and in the mouth and gills of reef fish. The Cleaner wrasse gets food and the reef fish get cleaned.

Encourage students to role-play the relationships above and ask them to find out about other relationships that occur on the reef.



Finding Out

Visit Reef HQ to learn more about human impacts on the Great Barrier Reef. Encourage students to develop a list of questions they want answered.

GBR Explorer

Use the Great Barrier Reef Marine Park Authority's reef education website

www.reefed.edu.au

The "GBR Explorer" is like an online encyclopaedia about the Great Barrier Reef.

Other useful websites have been listed in the **Websites** section of this unit.

Sorting Out

Reef HQ information

Discuss your excursion to Reef HQ.

Write recount sentences about the visit to Reef HQ, eg. At Reef HQ I found out...

What we know: knowledge circles

Students sit in two concentric circles. Arrange students in pairs, facing each other. Each pair exchanges information about their visit to Reef HQ to show what they observed, investigated and learned. After a given time each circle moves one place. Repeat the exchange in a new pair. Continue until students have shared information on a number of occasions. Bring students together into one large circle. Move around the circle, each student contributing one piece of information they learnt from another student.

Going Further

Guest Speaker

Invite a person from a local pet shop, aquarium shop or parent/community member who has experience setting up and looking after aquariums. Invite them to model how to set up an aquarium.

Focus particularly upon the needs of the animals (eg. clean water, food, hides etc.) and needs of the students (eg. easy to see, lots of colour, different size animals, easy cleaning etc.)



As a group make an inventory of your aquarium.

<i>In Our Aquarium</i>	<i>Needs</i>	<i>Living or Non Living</i>	<i>Daily</i>	<i>Weekly</i>	<i>Looks After Itself</i>

Who does what?

Read *A Fish out of Water* by Helen Palmer.

In consultation with the students and referring to the table, establish who will cater for the needs of the living things in your aquarium and your aquarium as a whole.

Role Plays

Read *Fun by the Sea* by A. Cooke

Role play the following scenarios:

- You want to stop on an island in the Great Barrier Reef for a picnic. A family is just leaving a beautiful spot and leaves the area littered with rubbish. What might you do?
- You want to use a barbecue on an island during the Christmas holidays, however fires are not permitted from November 1 until April 30. What might you do?
- You notice people cutting down and damaging trees and plants on an island. It is an offence to cut down or damage any standing trees or plants. What might you do?
- Reef walking is allowed on the Great Barrier Reef but it is expected that reef walkers do not damage or remove coral. You come across someone stepping on coral and living matter and picking up species that are attached to the reef flat. What might you do? and
- You see someone throwing out his or her bait bag whilst fishing on the Reef. This is against the Fishing Code. What might you do?

Other Reading

Read the following titles within the *Kids and Water* series to find information about water safety and interactions with the beach.



Enjoying the Reef

Have students draw pictures of themselves interacting with a coastal scene. In each drawing they should be wearing different articles of clothing that suit the activity they are participating in eg. Snorkelling, fish and chips on the beach, fishing, sandcastle making.

Students may even have photos at home of them participating in these activities. They could be brought into class and stuck on a large poster coastal scene, or students could simulate participating in these activities in the schoolyard, digital photos could be taken, printed out then stuck onto the poster.

Discuss how the students may be able to help care for the Great Barrier Reef when participating in these activities, eg. Pick up litter when walking along the beach, do not touch any coral when snorkelling, and throw back under and oversized fish.

Activities on the Reef?

Discuss different activities that could be undertaken on the Great Barrier Reef. Have the students come up with some ideas under these headings:

- What is fun about these activities?
- How could these activities be bad for the environment? and
- What rules should people follow when doing these activities?

Reef Activities may include:

- Fish feeding;
- Fishing;
- Whale watching;
- Snorkelling;
- Visiting islands;
- Reef walking;
- Turtle watching;
- Observing Seabirds; and
- Boating.

Making Connections

Continuum

Gauge student's feelings and values about the rules they have developed by asking them to stand on a continuum. Students who strongly agree with the rules can stand at the left of the classroom; students who strongly disagree can stand to the right of the classroom. Students place themselves anywhere on the continuum based on their feelings. Question students about their placement on the continuum.

Dioramas

Have students make aquarium dioramas. Students choose the environment they wish to feature and the animals and plants that go inside.



Letter to Reef HQ

Write a letter to us here at Reef HQ about ways the students have been helping care for the Great Barrier Reef.

The Education Team
Great Barrier Reef Marine Park Authority
PO Box 1379
TOWNSVILLE Qld 4810

Futures

Read *Where the Forest Meets the Sea* by Jeannie Baker. Ask students to suggest their preferred future for 'the place'. Show promotional and brochure pictures sourced from travel agents of Great Barrier Reef islands. Ask students to classify the islands. Are they developed islands or are they undeveloped/natural islands? Talk about and list the different activities the students may be able to participate in at the islands. Discuss the differences in the activities. Ask students to decide upon the island they would like to spend their holiday at and how they could help care for the island during their holiday.

Self Reflection

Have students fill out a self-reflection worksheet.

Taking Action

Communicate concerns/understandings

As a class, brainstorm ideas on how we can make sure other people in our community understand the importance of the Great Barrier Reef. Openly discuss ways in which we can try to teach other people best environmental practices.

Students could:

- Contribute to a class article for the school newsletter;
- Prepare a display of special places and features in the Great Barrier Reef and invite other classes or parents to view it and ask questions;
- Speak to other classes about the use and care of Great Barrier Reef areas;
- Make a poster to advertise care of Great Barrier Reef areas;
- Invite other classes to come and view your class aquarium; and
- Create a calendar illustrated with Great Barrier Reef environments and/or plants and animals with hints regarding how to best care for them.

Become a Reef Guardian School

This is an exciting, innovative program that encourages students, teachers, parents and friends to become involved in protecting our environment and the Great Barrier Reef. Reef Guardian Schools are environmentally active and participate in reef education through activities and environmentally friendly initiatives. Students and teachers promote best environmental practices and the importance of Reef protection to their communities.

To find out more go to:

<http://www.reefed.edu.au/guardians/>



Websites

Queensland Studies Authority – Science Syllabus

<http://www.qsa.qld.edu.au/yrs1to10/kla/science/docs/syllabus/syllabus.pdf>

Queensland Studies Authority – SOSE Syllabus

<http://www.qsa.qld.edu.au/yrs1to10/kla/sose/docs/syllabus/syllabus.pdf>

Reef ED

www.reefed.edu.au

Great Barrier Reef Marine Park Authority

<http://www.gbrmpa.gov.au>

Reef HQ

<http://www.reefHQ.com.au>

Australian Institute of Marine Science

<http://www.aims.gov.au/>

CRC Reef

<http://www.reef.crc.org.au/>

Department of Environment and Heritage

<http://www.deh.gov.au/>

Department of Primary Industries

<http://www.dpi.qld.gov.au/home/default.html>

National Geographic - Virtual World "Great Barrier Reef"

http://www.nationalgeographic.com/earthpulse/reef/reef1_flash.html

References & Resources

Great Barrier Reef Marine Park Authority. (1999) *Reef Manual*, GBRMPA, Townsville.

Baker J. (1987) *Where the Forest Meets the Sea*. Sydney: Julia McCrae.

Baker J. (1991) *Window*. London: Julia McCrae.

Base G. (1992) *The Sign of the Seahorse*. Ringwood: Penguin Books.

Brown A. (2001) *Turtle's Song*. St Lucia: University of Queensland Press.

Carle E. (1987) *A House for a Hermit Crab*. London: Penguin Group.

Cole J. (1992) *The Magic School Bus on the Ocean Floor*. New York : Scholastic.

CRC Reef Research Centre. (2000) *Tropical Topics*. Environment Protection Agency.

Grant J. (2001) *Everyone likes the Sea*. Wetpaper.

Lester A. (1990) *Magic Beach*. North Sydney: Allen and Unwin.



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Teaching Unit

Marcus B. (1985) *The Magic Shells*. North Ryde: Angus and Robertson.

Maris S. (2001) *At the Beach*. Wetpaper.

Murdoch K & Hamston J. (1992) *Integrating Socially: Units of Work for Social Education*. Melbourne: Eleanor Curtin.

Musso B. & Hutchinson E. (1996) *Corals and Coral Reefs and Mangroves: Teacher's guide 2*. UNESCO project.

Palmer H. (1963) *A Fish out of Water*, New York: Random House.

Parish S. (1996) *Big Picture Book of the Great Barrier Reef*. Brisbane : Steve Parish Publishing.

Pfister M. (1995) *The Rainbow Fish*. New York : North-South.

Swartz S.L. (2000) *Scuba Divers and Their Under-water Friends*. Australia: Pearson Education.

Swartz S.L. (2000) *Marine Life for Young Readers Series*. South Melbourne: Pearson Education.

Wet Paper Publishers and Consultants. (2000) *Kids and Water Series*. Australia: Wetpaper.

