

TEACHER INFORMATION

1. TOPIC: BEACH TYPES, BEACH CHARACTERISTICS AND BEACH DYNAMICS

2. AIM:

This activity is designed to enhance students' understandings of beach types, beach characteristics and beach dynamics, through investigating, researching and designing a beach model using recycled materials. This activity develops students' concepts, skills and knowledge using research and technology design. Students' group and citizenship skills are also developed as they work co-operatively together on this activity.

Teachers may also scaffold students where necessary, by engaging in whole class brainstorming and substantive conversations about the issue, thereby activating students' prior knowledge and experiences. In this way, peers can assist each other through a supportive classroom environment that encourages risk-taking.

3. PRIOR KNOWLEDGE:

Students' prior experiences and knowledge of dynamics, beach types and characteristics of local Gold Coast beaches.

4A. FOCUS QUESTION:

What are the dynamics of a Gold Coast beach?

4B. USEFUL VOCABULARY:

Wind, waves, solar heat, tides, wave height, wave length, wave strength, king tides, friction, erratic wind movements, rips, storms, surges, troughs, equinox, mangroves, cyclones, groynes, water traffic, artificial reefs, tourist pressures, beach cleaning, dredging, cruise ship terminal, erosion, pollution, shark nets, surf lifesaving, carnivals, dune stabilisation, El Nino, La Nina, SOI (Southern Oscillation Index), global warming, seasons.

5. CORE LEARNING OUTCOMES, STRANDS AND PROCESSES:

- Studies of Society and Environment

Key Values: Ecological and economic sustainability and peace.

Strand: Place and Space	Strand: Place and Space
Creating	Communicating
PS 5.3 Students participate in geographical enquiries to evaluate impacts on ecosystems in different global locations.	PS 5.4 Students use maps, diagrams and statistics to justify placing value on environments in Australia and the Asia-Pacific region.

- English (Draft)

Strand:		
Speaking and Listening:	Reading and Viewing:	Writing and Shaping:
Cu 5.1	Cu 5.2	Cr 5.3
Students interpret and construct texts with accessible but challenging ideas and issues, decide whether subject matter is appropriate for purpose and audience, identify influence of medium and interpret and establish relationships with different audiences, including the general public, in order to entertain, report and make judgements.	Students interpret accessible but challenging subject matter and explain meanings constructed by the interplay of setting, plot and characters; identify and explain choices made to achieve particular purposes and to appeal to and establish certain relationships with audiences, and identify how text type and mode and medium have influenced textual choices.	Students construct textual representations of people, places, events, things, and concepts selectively making choices to position readers/ viewers and appeal to different audiences and to explore cultural assumptions about groups.

Teacher's Activity Sheet 1: Coastal Education

TEACHERS MAY PRINT THIS FOR THEIR OWN USE.

- Technology

Strand: Technology Practice

TP 5.1 Students analyse links between knowledge, ideas and data gathered to meet design challenges and the design and development of new and improved products.

TP 5.2 Students generate ideas and communicate these in design proposals that indicate an understanding of factors influencing production of the option(s) they have selected.

TP 5.3 Students meet predetermined standards as they follow production procedures to make quality products.

Strand: Technology Practice

TP 5.4 Students use predetermined criteria to judge how well processes and products meet the needs of specific users, and recommend modifications or improvements.

Strand: Materials

MAT 5.1 Students compare and contrast materials according to their characteristics to determine how effectively the materials meet predetermined standards.

MAT 5.2 Students operate equipment and apply techniques for manipulating and processing materials to meet predetermined standards.

- Art

Strand: Visual Arts

VA 5.1a Students make images and objects to express personal responses to researched ideas.

6A. SYLLABUS LINKS:

Life-long Learners	Cross-Curricular Priorities	Learners and Learning	Equity
<ul style="list-style-type: none"> • Participant in an interdependent world • Reflective & self-directed learner 	<ul style="list-style-type: none"> • Literacy • Life skills 	<ul style="list-style-type: none"> • Unique individual with divergent views • Occurs within particular contexts 	<ul style="list-style-type: none"> • Meets the needs of students

6B. PRODUCTIVE PEDAGOGIES:

Intellectual Quality	Supportive Classroom Environment	Recognition of Difference	Connectedness
<ul style="list-style-type: none"> • Substantive conversation • Knowledge as problematic 	<ul style="list-style-type: none"> • Social support • Self-regulation 	<ul style="list-style-type: none"> • Inclusivity • Group identity 	<ul style="list-style-type: none"> • Knowledge integration • Connectedness to the world

6C. NEW BASICS (ALTERNATIVE CURRICULUM ORGANISER):

Life Pathways and Social Futures	Multiliteracies and Communications Media	Active Citizenship	Environments and Technologies
<ul style="list-style-type: none"> • Collaborating with peers and others 	<ul style="list-style-type: none"> • Mastering literacy • Making creative judgements and engaging in performance 	<ul style="list-style-type: none"> • Interacting with local and global communities 	<ul style="list-style-type: none"> • Building and sustaining environments

6D. RICH TASK (CULMINATING ACTIVITY):

Students rehearse, revise and give presentations to a School assembly, then to a parents' evening.

7. SUGGESTED FOLLOW-UP ACTIVITIES FOR TEACHERS:

- For more information or assistance please contact the CoastEd Coordinator at Griffith Centre for Coastal Management, Griffith University (Gold Coast) on (07) 55 528506 or gccm@griffith.edu.au. Alternatively search the CoastEd website at www.gu.edu.au/centre/gccm.
- Invite a Marine Biologist to address your class about beach types, beach characteristics, and beach dynamics.
- Ask the school’s librarian for resources, to be shared with your class, which will encourage discussions about beach dynamics. Read books on the topic. Ask your librarian to recommend some books.
- Teachers can download a selection of related excellent Educational Activities on the Gold Coast City Council website at www.goldcoastcity.com.au/teachers, including “The Shipwreck of the Cambus Wallace”. This interesting historical story tells us how human actions separated Stradbroke Island into two smaller islands. See Section 8 below. Other suitable Educational Activities are “Educating the Public: Water Conservation Poster”, “Beautiful Beaches”, “Wonderful Waves”.

8. USEFUL LINKS:

Web Address	Types of teaching and learning activities available
Queensland Environmental Protection Agency - Coasts and Oceans http://www.epq.qld.gov.au/environmental_management/coast_and_oceans/	This webpage provides a series of information sheets on coastal dunes and vegetation as well as information regarding storms.
Queensland Environmental Protection Agency http://www.epa.qld.gov.au/publications?id=20	This link provides information sheets on wave formation, surfing and the impact of storms.
Gold Coast City Council – History of the Gold Coast Beach Culture http://www.goldcoast.qld.gov.au/t_std2.asp?PID=2341	This web page summarises the history of beach culture on the Gold Coast.
Gold Coast City Council Library Services www.goldcoast.qld.gov.au/library	This page provides a link to the Library Catalogue, which contains “Picture Gold Coast”. This is a wonderful online collection of photographs documenting the beach history of the Gold Coast.
Gold Coast City Council - Beach and Water Safety http://www.gccc.com.au/t_std.asp?PID=289	This page details the Lifeguard’s beach and water safety rules, and the meanings of all the beach flags.
Griffith Centre for Coastal Management http://www.gu.edu.au/centre/gccm	This website contains details of the “CoastEd” programme including a brochure and “Expression of Interest Form” for schools to participate in one of its many educational programmes, including “Beach Clean Up” and “Coastal Processes”.
Sunsmart http://www.sunsmart.com.au	This site provides a schools’ and students’ link, which includes activities and information for primary school students.
Coast and Marine Education Framework http://www.environment.sa.gov.au/coasts/cmeducation.html	The South Australia Dept. of Environment and Heritage provides this list of resources related to coastal management and human impacts on the environment.
Field Activities for Coastal and Marine Environment http://www.deh.gov.au/coasts/publications/series/report10.html	The Dept. of Heritage and Environment provides this resource of field activities for primary students.
Gold Coast City Council www.goldcoastcity.com.au/teachers	Download and complete the following activities: Water Educating Poster (7/8), Shipwreck of the Cambus Wallace (8/9) and Stormwater Rap Song (8/9).

9. SOURCES:

- Queensland Studies Authority. (2000). *Studies of Society and the Environment Years 1 to 10 Syllabus*. Brisbane.
- Queensland Studies Authority. (2003). *English (draft) Years 1 to 10 Syllabus*. Brisbane.
- Queensland School Curriculum Council, (2002). *The Arts Syllabus Years 1 to 10*. Brisbane.

This Educational Activity was compiled by Dr J.D.G.Goldman ACM, Faculty of Education, Griffith University, Australia.

Teacher's Activity Sheet 1: Coastal Education

TEACHERS MAY PRINT THIS FOR THEIR OWN USE.

10. ANTICIPATED STUDENT RESPONSES:

- Step 1** In groups of four, students download from the Net a picture of their favourite Gold Coast beach.
- Step 2** Students plan, then construct, a model of a beach using recycled materials, which demonstrates how the sea erodes the coastline of their favourite beach.
- Step 3** Students plan, rehearse and make a presentation of their model and its processes to the class demonstrating the beach dynamics.
- Step 4** Students complete their Student Self-Evaluation Sheet on the sheet provided, and hand it to their teacher. Teachers complete the Teacher Assessment Criterion Grid Rubric for each group of students.

11. OCCUPATIONS IN COASTAL MANAGEMENT AND THEIR LEARNING PATHWAYS:

Care, protection and management of the coastal and marine environment is vital to the social and economic health of the Gold Coast, which is exposed along its whole length to the Pacific Ocean. Career opportunities in this area are growing in response to the Gold Coast's expanding tourism and marine industries, and to the increasingly important need to monitor and manage the effects of stormwater, natural processes such as wind, tides and rain, and human carelessness, local drought and also global warming.

Some University Degree occupations are:	Some Certificate, Apprenticeship, Traineeship or In-House occupations are;
<ul style="list-style-type: none"> • Coastal Engineer • Marine Biologist • Ecologist • Environmental Consultant • Bio-Chemist • Hydrologist • Climatologist • Meteorologist • Environmental Manager • Ecology Administrator • Marine Environment Pollution Lawyer • Ecotourism Guide and Educator • Marine and Coastal Environment Educator • Marine Surveyor • Marine Veterinarian • Marine Photographer/Artist • Marine Event Manager • Project Manager 	<ul style="list-style-type: none"> • Marine Photographer • Coastguard/Marine Rescue • Council Lifeguard • Beach Inspector • Water Services Officer • Marine Tourism Manager • Dive Instructor • Dive Boat Operator • Surfing Instructor • Rowing Instructor • Marine Sports/Swimming Coaches • Navigator • Pilot • Marina Operator • Naval Architect • Shipwright/Boat and Yacht Builder • Commercial Fishing/Trawler Operator • Recreational Boating Operator <ul style="list-style-type: none"> - Fishing Charter - Houseboat Charter - Cruiser/ Yacht Charter

Teacher's Activity Sheet 1: Coastal Education

TEACHERS MAY PRINT THIS FOR THEIR OWN USE.

12. FURTHER EDUCATION AND TRAINING OPPORTUNITIES FOR GOLD COAST YOUNG PEOPLE: UNIVERSITY DEGREES, APPRENTICESHIPS, CAREER PATHWAYS, CERTIFICATES AND QUALIFICATIONS:

Gold Coast Institutions offering Coastal Management and Marine Industries courses include the following. Check their web sites to see the current list of courses available and the relevant course outlines.

GRIFFITH UNIVERSITY GOLD COAST www.griffith.edu.au

- Bachelor of Science (majoring in Environmental Science)
- Bachelor of Science (majoring in Applied Biology)
- Bachelor of Science (majoring in Ecotourism)
- Bachelor of Science (majoring in Marine Biology)
- Bachelor of Science (majoring in Wildlife Biology)
- Bachelor of Environmental Planning
- Bachelor of Engineering in Coastal Engineering
- Bachelor of Engineering Technology
- Bachelor of Civil Engineering/Bachelor of Environmental Science
- Bachelor of Laws/Bachelor of Science
- Bachelor of Business (Tourism)
- Bachelor of Science in Environmental Health (at Logan campus)
- Bachelor of Health Promotion (at Logan campus)

CENTRAL QUEENSLAND UNIVERSITY www.cqu.edu.au (Distance Education)

- Bachelor of Environmental Science
- Bachelor of Chemical Science/Bachelor of Information Technology
- Bachelor of Science (majoring in Aquatic Resource Management)
- Bachelor of Science (majoring in Marine Ecology)

UNIVERSITY OF SOUTHERN QUEENSLAND www.usq.edu.au (Distance Education)

- Bachelor of Engineering Technology (majoring in Environmental Engineering)
- Bachelor of Science - Climatology
- Bachelor of Spatial Science
- Bachelor of Spatial Science Technology
- Associate Degree in Engineering (specialising in Environmental Engineering)
- Associate Degree in Spatial Science

SOUTHERN CROSS UNIVERSITY www.scu.edu.au

- Tweed Gold Coast Campus, Corner Brett and Wharf St. Tweed Heads Ph. 5506 9200
- Diploma of Sport Management (Surfing Studies)

GOLD COAST INSTITUTE OF TAFE www.goldcoast.tafe.net

- Course in Boatbuilding – Pre-Apprenticeship
- Certificate III in Marine Craft Construction
- Certificate II in Transport and Distribution (Marine Engine Driving III)
- Vessel Operator (12 metres) Certificate II in Transport and Distribution (Maritime Operations) Coxswain
- Vessel Operator (24 metres) Certificate III in Transport And Distribution (Maritime Operations) Master Class V
- Diploma of Business Management/Diploma of Business (Human Resources)
- Diploma of Business/Diploma of Sport and Recreation
- Diploma of Event Management
- Diploma of Tourism (Marketing & Product Development)/ Diploma of Tourism (Operations Management)

Teacher's Activity Sheet 1: Coastal Education

TEACHERS SHOULD PRINT THIS PAGE FOR EACH STUDENT.

AUSTRALIAN MARITIME TRAINING CENTRE www.maritimetraining.com.au

- Southport Yacht Club Marina, Main Beach Ph. 5571 0836
- Certificate I in Transport and Distribution (Maritime Operations) General Purpose Hand
- Certificate II in Transport and Distribution (Maritime Operations) Coxswain(Restricted)
- Certificate II in Transport and Distribution (Maritime Operations) Coxswain
- Elements of Shipboard Safety
- Marine Radio
- Recreational Powerboat Licence
- Recreational Seamanship and Radio
- Navigation

(Some courses are accredited by the Australian National Training Authority (now under the Department of Education, Science and Training - DEST) and Maritime Safety Queensland)

The following web sites offer information about new apprenticeships and trades along with relevant links and contacts to find out all the details of requirements for obtaining an apprenticeship or traineeship in coastal management or the marine industries.

GOLD COAST INSTITUTE OF TAFE

Apprenticeships and Traineeships in the Marine, Hospitality, Surf and Dive industries, at

www.goldcoast.tafe.qld.gov.au/courses/appship_tship/index.html

Click on 2006 Program Guide, and downloading the appropriate PDF file.

<http://www.newapprenticeships.gov.au/> - This provides contact details for your closest apprenticeship offices, and other links to more information about the apprenticeship programs.

<http://www.nsss.gov.au/> - This official Australian Government web address provides information about the trades, what they are, and how you can obtain qualifications in those trades.

QUEENSLAND STUDIES AUTHORITY

<http://www.qsa.qld.edu.au/testing/cross-curric/print-qcstest.html>

Outlines details of the Queensland Core Skills Testing. Provides information on the purpose, characteristics, testing conditions and the 49 common curriculum elements.

VOCATION EDUCATION AND TRAINING (VET) AT QUEENSLAND STUDIES AUTHORITY (QSA)

vet@qsa.qld.edu.au Provides information on VET and QSA.

VET IN SCHOOLS

http://cms.curriculum.edu.au/the_cms/tools/new-display.asp?seq=-9&industry=Vetis

Provides information on the training courses and resources available to be undertaken in schools.

The Gold Coast Education and Training Network, www.studygoldcoast.org.au/pathways

Click on "Where can I study?"



(Source: <http://www.gccc.com.au/>)

Teacher's Activity Sheet 1: Coastal Education

TEACHERS MAY PRINT THIS FOR THEIR OWN USE.

Then click on “Vocational Education and Training”, and check out the list of VET providers on this page.

INDUSTRY TRAINING ADVISORY BOARDS – ITABS

www.trainandemploy.qld.gov.au/partners/industry_news_and_events/industry/industry_training_advisory_bodies/contact.html

Promote and provide advice about the development of training products and services that meet the specific needs of an industry, either nationally or in a given region;

13. APPRENTICES AND YOUTH WORKERS IN THESE INDUSTRIES:

(Videos and /or other materials to be provided by the ICT industry staff.)

Teacher Assessment Criterion Grid Rubric

TEACHERS SHOULD PRINT THIS PAGE FOR EACH STUDENT'S ASSESSMENT.

What are the dynamics of a Gold Coast beach?

Names: _____

Class: _____ **Date:** _____

1. In groups of 4 students, from the Web download a picture of your favourite Gold Coast beach.
2. Research on the Web, or in the library, beach dynamics. Find out what they are, how they work, how strong they are, and other characteristics about them..
3. Plan and construct a model of your beach (up to 1 metre by 1 metre) using recycled materials to demonstrate how the sea erodes the coastline. Include, in a waterproof container, water for the sea, and for rivers that enter that beach. Design and construct small trees, bushes and sand dunes. Use toothpick flags to indicate features of your beach, as well as north direction. The model should demonstrate the way in which the sea erodes the coastline in three actions or dynamics:
 - a. Very small, low gentle waves
 - b. Medium waves
 - c. Large, cyclonic wavesAdd other dynamics such as wind (use an electric fan), rain (watering can), hail (chipped ice blocks), people trampling vegetation (toy figures), cars and other dynamics (actions) you can think of.
4. Plan, rehearse and make a presentation to the class demonstrating and explaining the beach type and its particular characteristics, what actions occur on your beach (beach dynamics), and what effects they have.
5. Complete your Self-Evaluation Sheet of this activity on the next page, and hand it to your teacher.

What are the dynamics of a Gold Coast beach?

1. What did I do well in this activity?

2. What could I do better next time?

Teacher Assessment Criterion Grid Rubric con't.

TEACHERS SHOULD PRINT THIS PAGE FOR EACH STUDENT'S ASSESSMENT.

3. What part of the activity did I find interesting?

4. What did I find was the most difficult part of the activity?

5. Self-assess my work on this scale. Tick my mark out of 10.

1 2 3 4 5 6 7 8 9 10

6. Write 3 reasons why I gave myself that mark.

a) _____

b) _____

c) _____

7. In my future learning I think I should try harder to; (please tick)

- listen more carefully
- communicate more clearly
- control my movements
- contribute to class and group discussions
- concentrate for longer periods
- be polite to other students and my teacher
- develop my abilities as a learner

Source: Marsh, C.J. (2005). Teaching Studies of Society and Environment. Frenchs Forest, Pearson Education.

What are the dynamics of a Gold Coast beach?

Name: _____ Class: _____ Date: _____

Very High Achievement	High Achievement	Sound Achievement	Limited Achievement	Very Limited Achievement
-----------------------	------------------	-------------------	---------------------	--------------------------

