



Protecting Our Coral Reefs for Future Generations (ProREEF)

Unit Summary

In the Philippines, only a small percentage of its coral reefs is spared from destructive fishing practices, land-based pollution, sedimentation, and global climate change. One of the primary concerns of the government right now is promoting awareness among its people to help conserve our natural resources like the coral reefs.

In this unit, students assume the role of environmentalists where their goal is to promote awareness on the importance of coral reefs and how to protect them. To do this, students will research and collect background information about coral reefs by surfing the web viewing video materials, reading print materials and visiting actual coral reefs, if feasible. They will create a multimedia presentation of their advocacy plan and a newsletter, flyer, and a website to promote conservation of coral reefs.

Curriculum-Framing Questions

- **Essential Question**
How do we affect our environment?
- **Unit Questions**
Why is it important that we take care of our coral reefs?
How can we help protect the coral reefs?
- **Content Questions**
What is a coral reef?
What do we get from coral reefs?
What living things are found in the coral reefs?
Why do these living things thrive there?
How do destructive fishing practices affect the coral reef?
What is the effect of dynamite fishing, cyanide poisoning and muro-ami on the productivity of coral reefs?
How do deforestation, heavy fertilizer use and soil erosion affect reef productivity?

Instructional Procedures

Implementation Plan (DOC 83.5KB): (One month before: Preliminaries)

- Send out/collect authorization/permission forms (Acceptable use policies parent consent forms for e-mail projects, Internet, field trip, etc.)
- Reserve the equipment and computer laboratory.
- Check out books/journals/magazines/newspapers to use in your class.
- Make arrangement with computer teacher on computer use & additional instruction on software use.
- Schedule a day for launching student advocacy campaign.
- Schedule a visit & reserve speaker for the talk.
- Purchase/obtain materials and supplies to support hands-on activities.
- Upload your teacher-created website for student use during Unit.
- Double-check URLs that students will use prior to computer time. Update Favorites or teacher website.
- Set up how you will store/share student work.
- Be sure students have prerequisite skills and provide training opportunities for those who are below skill level in using computer programs.

At a Glance

Grade Level: 5

Subject(s): Science

Time Needed: 16 class meetings (each meeting is 60 minutes)

Things You Need

[Standards](#)

[Resources](#)

Day 1 (Introduction)

- Students are introduced to coral reefs using a [multimedia presentation](#) (PPT 920KB) given by the teacher.
- Students do Activity 1 “Coral Reef Pie Chart” and engage in a class discussion. Using a paper plate representing the earth pupils will construct a pie chart showing the land (1/4) & ocean (3/4) fractions of the earth. The ocean fraction shall be divided further into two, one part representing the coastal zone where food from the ocean can be obtained. The fraction of the coastal zone where photosynthesis takes place shall be represented by dots. Coral reefs are located in this zone. After doing the pie chart, pupils shall locate on the globe the 25° North and South of the equator where these coral reefs are found.
- Teacher also presents to the class the [website](#) (PDF 482KB) she developed for the class.

Day 2

- Students view a video about coral reefs and reflect on coral reefs by writing a [poem](#) (DOC 227KB) ([second sample poem](#) (DOC 62.5KB)) or short essay.
- As homework, students read up on existing laws and articles on fishing methods and reasons for choosing the correct fishing methods on the part of the fisherman.

Day 3

- Students view a video on human practices that destroy coral reefs.
- Students do Activity 2 “Coral Consequences” and engage in a class discussion. Students will brainstorm on the possible consequences resulting from continuous practice of dangerous fishing methods, soil erosion due to deforestation, and heavy fertilizer use.

Day 4

- Students do Activity 3 “Do Your Part (Role-playing)” and engage in a class discussion. Students shall think of ways to protect the coral reefs while playing the roles of: beach resort owner, lawmaker and fisherman.

Day 5

- Students listen to a talk by an expert on effects of deforestation, soil erosion and heavy fertilizer use on coral reef productivity and engage in an open forum.

Note: Prior to this day, follow-up speaker and venue for talk.

Day 6

- Students view the multimedia presentation on [formulating an advocacy campaign](#) (PPT 1.17 MB) and clarify steps in an open forum.

Days 7-8

- Students divide into groups to brainstorm on their advocacy plan to save the coral reefs.

Note: Prior to students working on the computer laboratory, teacher will post the [rules](#) (PDF 205KB) on computer use.

Days 8-9

- Students, in groups, write down their advocacy plan. They can use the [advocacy plan sheet](#) (DOC 76KB) provided by the teacher.
- Students prepare a multimedia presentation of their advocacy plan.
Development of a Student Multimedia Presentation
 - Students use a Microsoft PowerPoint* template to guide them through the presentation.
 - Students cite all sources used.
 - Students present their Microsoft PowerPoint* presentations to the class.

Day 10

- Students [present their advocacy plan](#) (PPT 398KB) per group.
- Students discuss and decide on one plan incorporating selected activities for class implementation (e.g. creating a [website](#) (PDF 103KB), publishing a [newsletter](#) (PDF 330KB), [brochure](#) (PDF 268KB)).

Days 11-15

- Students work on their specific tasks under the plan.

Development of a Student Website

- Students use the Internet for researching on the content of the website.
- Students write articles for the website.
- Students use Microsoft Publisher* to create their website.
- Students search the Internet for appropriate photos/pictures.
- Students cite all sources used.
- Students use the Yahoo Geocities* for free hosting of their website.

Development of a Student Newsletter/Brochure

- Students use the Internet for researching on the content of the newsletter/brochure.
- Students write articles for the newsletter/brochure.
- Students use Microsoft Publisher* to create a newsletter/brochure.
- Students search the Internet for appropriate photos/pictures.
- Students cite all sources used.
- Students publish their newsletter/brochure on paper.
- Students prepare distribution plan for the newsletter/brochure. Students also publish their newsletter online. This can be one of the links in their website.

- Students use print and non-print materials as needed.

Day 16

- Students launch their advocacy campaign.
- At the end of the 1st week of implementation (if launched) or at the end of the unit, students reflect on what they learned using the [student's reflection sheet](#) (DOC 76KB).

Implementation Plan (DOC 83.5KB): (A week after implementation: Post-implementation)

- Post evaluation (teacher self-reflection, student reflection, parent survey)
- Clean up files at the computer laboratory.
- Return books and other materials used.
- Schedule a presentation for donors and community officials.
- Think about the next unit that could effectively integrate technology.
- Distribute [Certificate of Appreciation](#) (PDF 90.9KB) to speakers.
- [Award](#) (PDF 78.3KB) the group who has the best advocacy plan.

Prerequisite Skills

Computer Skills

- Basic skills in manipulating the computer like saving information to various drives (A, file server, desktop, C), printing, and using an electronic encyclopedia.
- Basic surfing skills like using search engines (e.g. AltaVista*, Ask Jeeves*, Google*).
- Basic skills in using office applications like Microsoft Word*, Microsoft PowerPoint*, and Microsoft Publisher*.

Communication Skills

- Use of notes and note taking skills.
- Basic skills in planning an advocacy campaign.
- Basic knowledge in journalistic skills (e.g. news writing, editorial writing, features writing, photojournalism).

Differentiated Instruction

Resource Student

- Eliminate advocacy planning and implementation.
- Concentrate on hands-on activities and viewing of videos and multimedia presentations.
- Add more drawing activities instead of class discussions and writing exercises.

Gifted Student

- Supplement with exposure trips to coral reefs if feasible.
- Encourage them to lead, plan and implement a school-wide Coral Reef Week; organize a local club (i.e. ProREEF).
- Encourage more creative work like literary portfolios, art exhibits, songs and drama/plays.

Coastal Area

Students may go to actual coral reefs and survey the different organisms thriving there (by zone) to come up with an organism density in the surveyed zones of the reef. The class can also interview fishermen on what fishing method they practice and their reason for choosing it.

Non-Coastal Area and No Nearby Marine Institute

In lieu of coral reef and/or Marine Institute visits, the teacher may borrow or procure more video materials to enrich their learning.

Student Assessment

Students shall be graded according to:

Self-evaluation and peer evaluation (DOC 105KB)	20%
Advocacy plan per group (per group: initial presentation)	30%
Plan rubric (DOC 88KB) (mechanics, content)	25%
Multimedia presentation rubric (DOC 96.5KB)	5%
Incorporation of technology (refer to specific group)	50%
Website group rubric (DOC 83.5KB)	
Newsletter group rubric (DOC 88.5KB)	
Brochure group rubric (DOC 86.5KB)	
T-shirt and sticker design & production group rubric (DOC 86.5KB)	

TOTAL

Key Word Search

- Coral reefs
- Environment
- Conservation of coral reefs

Credits

Risa Reyes, Pia Campo, and May Ronda are staff of UP NISMED who participated in the Intel® Teach Program Training last March 2003. They developed this unit plan idea as a team, during the training and enhanced their work after the training. This is the enhanced version of their training output.

Note: The hyperlinked support documents are not part of the PDF. They can be downloaded and printed individually.

Designing Effective Projects: Coral Reefs

Content Standards and Objectives

Targeted Philippine Basic Education Curriculum Competencies

Philippine Elementary Learning Competencies

Science and Health for Grade V

Animals

1. Explain the importance of coral.
 - a. Describe coral reefs.
 - b. Identify the importance of coral reefs.
 - c. Discuss practices that cause destruction of coral reefs.
 - d. Predict what will happen when coral reefs are destroyed.
 - e. Identify ways of saving coral reefs.
 - f. Participate in efforts to save coral reefs.

Student Objectives/Learning Outcomes

For Science

At the end of the unit, students should be able to:

1. Describe a coral reef.
2. Show where coral reefs are found.
3. Enumerate the living things found in a coral reef.
 - a. Describe coral polyps in detail
 - b. Infer why these living things thrive there.
 - c. Enumerate beneficial products from coral reefs.
4. Explain why it is important that we take care of coral reefs.
5. Describe some common examples of destructive fishing practices.
6. Research on why fishermen engage in these practices.
7. Explain how destructive fishing practices (e.g. dynamite fishing, cyanide poisoning, and muro-ami) affect the productivity of coral reefs.
8. Explain how deforestation, heavy fertilizer use and soil erosion affect reef productivity.
9. Plan an advocacy campaign to protect our coral reefs.
10. Implement the advocacy plan.

For Technology

At the end of the unit, students should be able to:

1. Demonstrate an understanding of the ethics of copyright by citing sources used in producing each required output.
2. Use a multimedia presentation, and publication software in creating publication materials.
3. Use the web to effectively to collect information about coral reefs.
4. Use e-mail for correspondence.

Designing Effective Projects: Coral Reefs

Resources

Materials and Resources

Printed Materials

- Magazines
- Journals
- Newspapers
- Books
- Encyclopedia
- Photos*

*optional

Supplies

Newsletter/Brochure/Stickers/

- Bond paper
- Printer ink
- Sticker paper

T-shirt

- Silkscreen
- Paint

For the activities

- Paper plates
- Ruler
- Pentel pen
- Globe, costumes (e.g. coat and tie for congressman, kamisa de chino for fisherman),
- Scratch paper and pen

Internet Resources

- Reefpix website:
<http://www.reefpix.com.au/>*
- Ecocean website:
<http://www.ecocean.org/whalesharks01.html>*
- Oyster River Cooperative School District website:
<http://www.orcsd.org/>*
- Sea World Adventure Parks website:
<http://www.seaworld.org/infobooks/Coral/phychr-cr.html>*
- Coral Reef Alliance website:
<http://coralreefalliance.org/aboutcoralreefs/cyanidefishing.html>*
- Republic of the Philippines Department of Environment and Natural Resources website:
<http://www1.denr.gov.ph/article/articleview/135/1/61>*
- Jeff's Nudibranch Site and Coral Reef Gallery:
<http://www.divegallery.com/>*
- Haribon (Philippines) Foundation website:
<http://www.haribon.org.ph/>*

- Reefbase global information system of coral reefs:
http://www.reefbase.org/threats/thr_ReefsAtRisk.asp*
- World Resources Institute website:
<http://newsroom.wri.org/advisories.cfm>*
- International Coral Reef Information Network (ICRIN) website:
<http://www.coralreef.org/>*
- Reports Online Magazine in International Development Research Centre website:
<http://www.idrc.ca/books/>*
- Lesson Plans in Utah Education Network website:
http://uen.org/lessonplan/upload/95-2-882-Advocacy_Plan.pdf*
- Coral information in Enchanted Learning website:
<http://www.enchantedlearning.com/subjects/invertebrates/coral/Coralprintout.shtml>*
- Klaus Jost website:
<http://www.jostimages.com/galerie/unterwasserwelt/korallen.html>*

Please refer also the [works cited](#) (DOC 41.5KB) document.

Technology – Hardware

- Computer(s)
- Digital Camera
- Internet Connection
- Printer Projection System
- Scanner

Technology – Software

- Web Page Development
- Image Processing
- Encyclopedia on CD-ROM
- Multimedia
- Word Processing
- Web Browser
- Desktop Publishing