

Instructional Recipe

How Do Oceans Affect Coastal Regions and the People Who Reside There?

Fourth Grade, Science & Language Arts

Step 1 – Ask

Objectives:

Students will describe the effects oceans have on coastal land and the people who reside there. Students will develop suggestions for dealing with the impact oceans can have on coastal land.

Introduction:

Play a video clip of a tsunami.

"*tsunami: 1946 Hilo tsunami.*" Online . Encyclopædia Britannica Online School Edition. 12 July 2008
<http://school.eb.com/elementary/art-68438>.

Explain that most effects that oceans have on land are not this dramatic.

Simulate ocean waves and coastal erosion using a clear rectangular pan, sand, water, and a wooden block. Fill the pan with about 1 inch of water. Place sand at one end. Move the block back and forth to simulate ocean waves. Observe and discuss the effects of "waves" on the sand.



"*Barbados: palm trees by the ocean.*" Online Photograph. Encyclopædia Britannica Online School Edition. 26 July 2008
<http://school.eb.com/elementary/art-109753>.

Ask:

- ★ How do oceans affect coastal regions and the people who live there?
- ★ Where are some specific places in which the oceans' effect on land have been in the news lately.
- ★ What are some strategies for dealing with the negative impact oceans can have on coastal lands and the people who reside there?

Vocabulary:

- ★ wave
- ★ tsunami
- ★ coastal erosion

Science TEKS:

(4.11) **Science concepts.**
 (B) summarize the effects of the oceans on land.

English/Language Arts TEKS:

(4.5) **Listening/speaking/audiences.**
 (D) use effective rate, volume, pitch, and tone for the audience and setting.
 (4.13) **Reading/research/inquiry.** (C) use multiple sources, including electronic texts, experts, and print resources, to locate information relevant to research questions; (E) summarize and organize information from multiple sources by taking notes, outlining ideas or making charts; and (G) draw conclusions from information gathered from multiple sources.

Technology Application TEKS:

(4) **Information acquisition.**
 (A) apply appropriate electronic search strategies in the acquisition of information including keyword and Boolean search strategies.
 (5) **Information acquisition.**
 (A) acquire information including text, audio, video, and graphics.

Step 2 – Investigate

Brainstorm search terms such as *ocean, wave, erosion, tsunami*, and “*coastal erosion*.”

K-12 Databases Resources:

- ★ "erosion." *Encyclopædia Britannica*. 2008. Encyclopædia Britannica Online School Edition. 13 July 2008 <<http://school.eb.com/eb/article-9032940>>.
- ★ [At beaches, sand is running out.](#) (cover story) By: Richey, Warren. *Christian Science Monitor*, 7/08/99, Vol. 91 Issue 155, p1, 0p, 2 color; (AN 2005913)
- ★ [Erosion threatens South Florida's beaches](#) By: Fleshler, David. *Sun-Sentinel* (Fort Lauderdale, FL), 11/03/2007; (AN 2W62W63023179044)
- ★ [HELP FOR A DISASTER.](#) By: Ryan, Maureen. *Scholastic Action*, 4/18/2005, Vol. 28 Issue 13, p14-16, 3p, 3 color; Reading Level (Lexile): 700; (AN 16696041).
- ★ "Aceh, Indonesia, tsunami." Online Photograph. *Encyclopædia Britannica Online School Edition*. 14 July 2008 <<http://school.eb.com/elementary/art-114382>>.

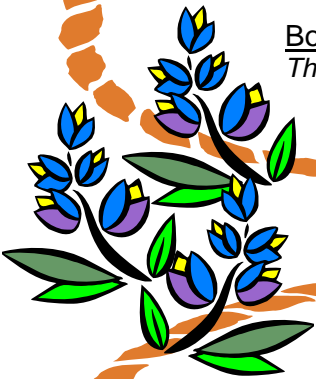
Additional Websites:

FEMA for Kids: Tsunami <http://www.fema.gov/kids/tsunami.htm>

On the Beach http://www.pbs.org/newshour/bb/environment/july-dec03/beach_8-22.html#

Books:

The Indian Ocean Tsunami by Greg Roza



Step 3 – Create

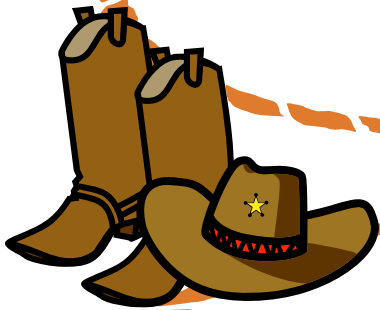
- ★ Students will take notes on ocean phenomena and their impact on coastal lands and the people who reside there.
- ★ Students should note their ideas for preparing for or reacting to said phenomena.

Geographic Location	Description of ocean phenomenon	Effect on coastal land and its residents	Suggestions for preparing for or lessening the impact of the phenomenon

Step 4 – Discuss

- ★ **Public Awareness Campaign-** Students will create a public awareness campaign about an effect oceans have on a particular coastal area and the people who reside there (e.g., beach erosion in California or the tsunami that struck India in 2004). Students will offer suggestions for what can be done to prepare for and/or lessen the impact of the phenomenon. The format of the final product will be up to the student; however, all projects should include an oral presentation component.

🔗 Technology Link – Students may use a digital video camera or a slideshow program, such as PowerPoint, to create their product.



Step 5 – Reflect

Allow students to present their projects to the rest of the class. Use the following suggested rubric to assess the students' work. Make sure that the students are familiar with the rubric *before* they begin creating their project. They should refer to the rubric repeatedly to monitor their progress in creating their project.

🔗 Technology Link: You can also create your own rubric with your students at <http://rubistar.4teachers.org/index.php>.

Rubric

Public Awareness Campaign: Oceans' Impact on Coastal Lands

CATEGORY	4	3	2	1
Research/Statistical Data	Students include 4 or more high-quality examples or pieces of data to support their campaign.	Students include at least 3 high-quality examples or pieces of data to support their campaign.	Students include at least 2 high-quality examples or pieces of data to support their campaign.	Students include fewer than 2 high-quality examples or pieces of data to support their campaign.
Campaign/Product	Students create an original, accurate and interesting product that adequately addresses the issue.	Students create an accurate product that adequately addresses the issue.	Students create an accurate product but it does not adequately address the issue.	The product is not accurate.
Sources - Quality	Students include 4 or more high quality sources.	Students include 2-3 high quality sources.	Students include 2-3 sources but some of are questionable quality.	Students include fewer than 2 sources.
Sources-Citation	Information in all source citations is correct and in the format assigned.	Information in all source citations is correct but there are minor errors in formatting.	Information in almost all source citations is correct AND there are minor errors in formatting.	The information is often incorrect OR there are major errors in formatting.

Public Awareness Campaign: Oral Presentation

CATEGORY	4	3	2	1
Preparedness	Student is completely prepared and has obviously rehearsed.	Student seems mostly prepared but might have needed a couple more rehearsals.	The student is somewhat prepared, but it is clear that rehearsal was lacking.	Student does not seem at all prepared to present.
Speaks Clearly	Speaks clearly and distinctly all (100-95%) the time, and mispronounces no words.	Speaks clearly and distinctly all (100-95%) the time, but mispronounces one word.	Speaks clearly and distinctly most (94-85%) of the time. Mispronounces no more than one word.	Often mumbles or can not be understood OR mispronounces more than one word.
Stays on Topic	Stays on topic all (100%) of the time.	Stays on topic most (99-90%) of the time.	Stays on topic some (89%-75%) of the time.	It was hard to tell what the topic was.
Posture and Eye Contact	Stands up straight, looks relaxed and confident. Establishes eye contact with everyone in the room during the presentation.	Stands up straight and establishes eye contact with everyone in the room during the presentation.	Sometimes stands up straight and establishes eye contact.	Slouches and/or does not look at people during the presentation.
Content	Shows a full understanding of the topic.	Shows a good understanding of the topic.	Shows a good understanding of parts of the topic.	Does not seem to understand the topic very well.
Volume	Volume is loud enough to be heard by all audience members throughout the presentation.	Volume is loud enough to be heard by all audience members at least 90% of the time.	Volume is loud enough to be heard by all audience members at least 80% of the time.	Volume often too soft to be heard by all audience members.