

Oceans & Aquatic Environments



McKenzie Ballod, Brittany Balsiger, Sarah Bridges, Rachel Denny,
Mari Doyal, Molly Nelson, Beth Rocchi, Kaity Sellers & Taylor Steed



Oceanography Jeopardy



[Jeopardy Powerpoint](#)

Oceanography Jeopardy is a free teacher resource obtained from the Issaquah School District. Members of the district's staff created this PowerPoint to be shared through networking and used in classrooms. This tool promotes student interest, reinforces material learned in classroom, helps review concepts for a test, and engages students with the material in an exciting game. Jeopardy in the classroom is split up into teams; it is a chance to collaborate and review with no pressure because it is seen as a fun competition. The grade level this tool was created for is 4th to 5th grade, but the PowerPoint can be edited to change/ add to the content and make it appropriate for the goals of a specific grade or unit.

Teachers can use this resource as an informal assessment of student knowledge. It is also a quick and easy way to gauge how the class as a whole is comprehending the material on oceanography. If there are students who are visual learners, have hearing impairments, or language deficits this is an excellent tool as it practices using questions and visually seeing answers. It is an activity that can be done multiple times throughout a unit to cultivate learning and integrate facts. Jeopardy can be a valuable opportunity for students to reflect on what they know and provide feedback on what would help them to understand concepts they are struggling with.

Additional PowerPoint Jeopardy games about the ocean and aquatic life can be created for free classroom use by going to sites like [jc-schools.net/tutorials/ppt-games/](http://www.jc-schools.net/tutorials/ppt-games/). This site provides a Jeopardy template that can be filled in with important concepts from any ocean unit and ready to use instantly.



EPA.gov

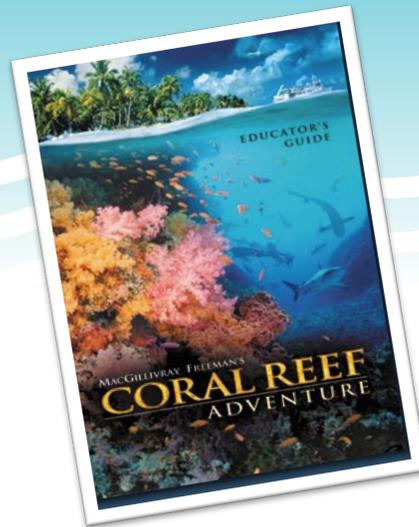
One website that I found that is a great resource is epa.gov. This website has been established by the United States Environmental Protection Agency. The website provides a vast amount of information on all ecosystems including marine and freshwater. There are also links to information about current events correlating to each ecosystem such as the marine and freshwater ecosystems. For example, on the marine ecosystem page there is a link to the EPA's response to the BP oil spill in the Gulf of Mexico. Links are also provided to explore the National Oceanic and Atmospheric Administration's view on topics and ecosystems.

I think that this website would be good for students to explore to not only gain basic information about different ecosystems, but also how the government tries to protect these environments. It is also a good site for students because I know that it has appropriate information and that the information is true. It would also be a good place for students to gather ideas about how they could help protect these environments as a class.

One negative to this website is that it is biased. The site is not going to explain negatives to their system or how they could improve. Information will not be provided on how they could have prevented incidents or done something different/better. One other downside is that because this website is so vast, it might be difficult for students to navigate or find what they are looking for.

Coral Reef Adventure

MacGillivray Freeman Films



“Pollution, overfishing, and overuse have put many of our unique reefs at risk. Their disappearance would destroy the habitat of countless species. It would unravel the web of marine life that holds the potential for new chemicals, new medicines, unlocking new mysteries. It would have a devastating effect on the coastal communities from Cairns to Key West, Florida— communities whose livelihood depends upon the reefs.”

—Bill Clinton, PRESIDENT OF THE UNITED STATES, AUGUST 1996 INTERNATIONAL YEAR OF THE CORAL REEF 1997



Coral Reef Adventure is a film created with large support of the National Science Foundation to highlight the beauty and importance of the coral reefs in the world's oceans. “The biodiversity of the reef system supports a vast interdependent food web, from microscopic plants and animals to humans.” This important ecosystem is currently being threatened by human impact.

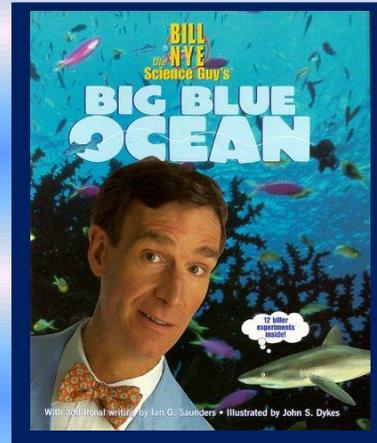
This film would be a great way to introduce students to a beautiful part of our oceans while also teaching them about the impact we as humans have on our ecosystems and the responsibility we hold to keep our coral reefs safe. In addition to this educational film the creators have put together what they call an “educators guide.” This guide is filled with recommended readings and books for different age groups, additional web sites and a variety of activities and science experiments all supporting the information from the film. This film would be a great either starting point or addition to any ocean unit. I would likely start with the Coral Reef Adventure film and then follow up with using some of the activities provided as extra support. I think it is great to be able to share beautiful footage with our students and then further their knowledge through the extension activities.

<http://www.coralfilm.com/CRAEducatorGuide.pdf>

Book Review

Bill Nye the Science Guy's Big Blue Ocean

Big Blue Ocean is a great teaching resource for explaining ocean and aquatic life and basic facts about the ocean. Some of the topics that are present in the book are how much of the Earth's surface is covered with water, the gases that are in



This book is beneficial to teachers and parents for teaching their students and children facts about the ocean and aquatic life because it gives the basic information needed for children to understand each concept, plus it gives step-by-step directions that are easy for adults and kids to follow for performing great experiments. This allows them to see how each concept works in the ocean or lifestyle of the aquatic animal.

Find it online or at your local public library!

Title: *Wildlife of the Oceans*
Author: Albert C. Jensen
Type of Book: Reference



This source is a very reliable one full of all kinds of facts regarding the oceans of the world and the wildlife that live in them. This resource goes into depth on multiple specific oceanic topics. One of the major ones covered is reefs. Described thoroughly in this book you can find information on different types of reefs in the oceans, how they grow, and the animals that were naturally not there but had migrated there and called it home, bizarre animals that live there, cleaning stations, and how the reef is dying. The following is an example of the type of information that you can find regarding the death of the Great Barrier Reef; the reef seems to be a very permanent structure, but in fact that is not true. The reef grows at a rate of about two and a half centimeters each year, and has many different components of the ocean working against it. Many different things such as strong currents, enormous waves such as tsunamis and typhoons, and other storms break away at the reefs. There are also clams, sponges, and some worms that wiggle holes into the reef that also adds to the breakage. As well as that, during low tides the heat of the sun also damages the reef, as the sun rays beat down onto it burning and drying out the top of the reef. The fresh water that gets rained onto the reef when the tides are low is also fatal to parts of the reef. Lastly, one of the largest contributors to the depletion of the coral reefs in the world is human destruction. People collecting tropical fish for home aquariums, spear fishermen (using bleach to draw fish from hiding), reef mining for agricultural lime, cement, road building material, etc., sewage and oil pollution, and boaters smashing the reefs are some of the many ways that humans are adding to the death of coral reefs.

This book is a good source to use for oceanic research and especially research on the living creatures that call the oceans home. One downfall of this book that might make this source slightly questionable to use would be the age of it. It was published in 1979 and since then there have been oil spills, changes in endangered species, different storms and extreme weather conditions, and many other occurrences that have affected the oceans. As a result, the information from this resource could be false or differ from information regarding the wildlife that live in our oceans today.

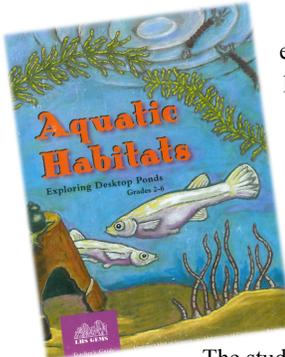
Aquatic Habitats Kit

The GEMS Aquatic Habitat kit is targeted towards 2nd through 6th grade students. The kit contains five interactive activities for the students to complete. Essentially the students set up their own living pond as a model for the different activities. They then use these hands-on activities to study the aquatic ecosystem they themselves have created. The kit is \$357 and can be found on the Carolina Curriculum website at

www.carolinacurriculum.com. The Aquatic Habitat kit comes with a teacher's guide, an information packet, and the materials needed for a class of 32.



Creating the life-like pond is a gradual process because students study and add one type of organism at a time (i.e. plants, worms, snails, fish, and mosquito larvae). This allows students to observe the interactions within a pond ecosystem right from the comfort of their own classroom. It could also be interesting to finish this kit and then take the students to a natural pond ecosystem so they could compare. This kit allows students “to increase their ability to comprehend the diversity of organisms, their adaptations, and interdependence within an ecosystem” (Carolina Curriculum). The benefits of this kit include; introducing students to the foundational science concepts, all lessons are aligned with multiple state standards, the teacher’s guide provides step-by-step instruction, assessment suggestions, literature connections, and ideas for future instruction, and finally, students will love the hands-on interactions.

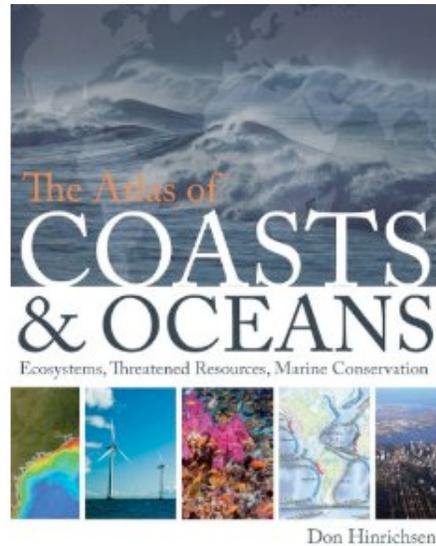


The Carolina Curriculum Company did a great job incorporating everything that I would want to see in a science kit. The website provides the consumable materials you would need to replenish you kit for future years. The website also provides workshops where you can learn more about the different kits the company makes. I also found that the company is readily available to answer any questions you may have about what is in the kit, purchasing, or using the materials. The GEMS program was evaluated by the United States Department of Education's Mathematics and Science Education Expert Panel, and it was found to be a "Promising Science Program."

The studies done on the GEMS program indicate that the program improves student learning, improves the understanding and practice of inquiry, reaches students of all levels, and fosters positive attitudes/motivation of students in science. The research is here to back up the GEMS science kits, and after looking deeper into the product, it is something I hope to use in the classroom to help my students learn and grow.

National Standards addressed in Aquatic Habitats Kit:

1. Science in Personal and Social Perspectives Standard, K–4: Changes in environments.
2. Life Science Standard, K–4: Organisms and their environments.
3. Earth and Space Science Standard, K–4: Properties of earth materials.
4. Inquiry Standard, K–4: Abilities necessary to do scientific inquiry.
5. Unifying Concepts and Principles: Systems, order and organization; Evolution and equilibrium; Evidence, models and explanation.



Title: *The Atlas of Coasts and Oceans: Ecosystems, Threatened Resources, Marine Conservation*

Type of Resource: Reference Book

Author: Don Hinrichsen

This book, which was released in soft cover in 2011 focuses on the vast oceans of the world, as well as the coastlines, both of which are very important to the world ecosystem. With the basic information about the oceans and coasts, the book also chronicles the effects humans have had on these important resources. Besides just discussing the water, this book also presents information on other aspects of the marine environment, including coral reefs and fish populations. Through the use of colorful pictures, maps, charts and graphs the reader's eyes are opened to the problems that face our oceans. Along with outlining all the problems, the book also outlines ways to help protect these resources for future generations. *The Atlas of Coasts and Oceans* would be a great resource for anyone interested in learning about the oceans that cover the majority of our planet, the troubles facing those bodies of waters, and how to help protect them.

The book is extremely user friendly and would be interesting to a variety of readers. Students, especially older elementary and middle school students, could use the book in the classroom as a resource for projects or as a book to peruse for those interested in our world's water sources. It would also be great for teachers as a resource for presentations and lesson plans. Currently this title is seen as one of the definitive titles on the topic of oceanography and marine conservation on the market. You can look for it at your local bookstore or order it online at Amazon.com.



Educational Video

<http://disney.go.com/disneynature/oceans/>

“Oceans adds another visually stunning chapter to the Disney Nature library.”



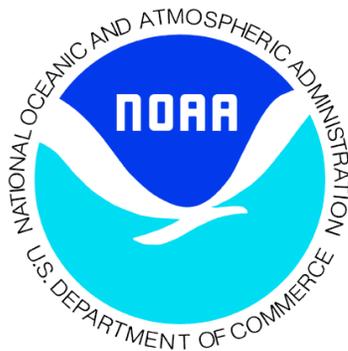
“Perfect for families and exquisitely shot, this entry from the Disney Nature division is even better and fresher than last year's “Earth.””



Disney Nature Oceans premiered on Earth Day in 2010. It tells the story of remarkable creatures found under the sea. The images are stunning and enhance the child like story narration. The film shows all kinds of under water creatures that children know, as well as some rare deep-water animals. They are able to film these creatures using state-of-the-art-underwater filming.

This film would be a perfect addition to any Oceans and Aquatic Environments unit. The Disney Nature website provides educational materials and activity guides that enhance students' geographic and scientific knowledge of the Earth's oceans. The educator's guide specifically offers lesson plans that incorporate elements from the Disney Nature film into the classroom. The film could be shown at the beginning of a unit to introduce specific creatures or be used at the end of a unit to reinforce what has been learned through the unit.





National Oceanic and Atmospheric Administration

The Website: <http://www.education.noaa.gov/>
US Department of Commerce

Overview:

The National Oceanic and Atmospheric Administration (NOAA) provides a free web-based resource for educators teaching environmental education. NOAA's educational resources site centralizes many different types of resources for teacher's convenience, and materials are organized by themes, topical collections, and content type. Resources are aligned with common teaching practices, suitability of activities, and can be reasonably integrated into different areas of the curriculum. Additionally, NOAA provides links to many other resources which "support educator professional development, academic scholarship, career exploration, and education grants".

Content and Organization (linked to site):

Ocean and Coasts



Physical and chemical processes of ocean and coastal areas

Climate



Earth's climate system and concepts related to climate variability

Weather and Atmosphere



Patterns, processes, and factors which influence Earth's weather and atmosphere

Marine Life



Biology, habits, and threats to organisms that live in aquatic environments

Freshwater



Sources, processes, and threats to freshwater environments and drinking water

In each of the above categories, educators can find resources and links for multimedia, lessons and activities (with suggested grade levels), real world data (live or historical), background information, career profiles (video and narratives of scientists and others working in ocean and aquatic environments), published articles and much, much more relating to each category.



Life in an Estuary

