



WOW: OCEANS

GETTING STARTED, GRADES 9-12

LEARNING OBJECTIVES

A healthy functioning ocean system can be defined by its robust biodiversity, salinity and currents. To better understand ocean systems and improve conservation and stewardship initiatives and projects we must not only look at scientific data, but at our student's ability to identify ocean system benefits to nature and to humankind. An ocean is a part of a larger system and at the same time made up of many smaller systems. To ensure a health and long-term sustainability we must look holistically at its social, economic and environmental issues.

Students will deepen their knowledge and begin developing a conservation and stewardship mindset about oceans as a natural resources.

- Understand the basic characteristics of the ocean as a system, how the ocean is made up of smaller system and the role the ocean plays in Earth's systems.
- Study coastal and ocean ecosystems and their relationship to watersheds and wetlands through research and communications with resource experts, and conduct field investigations using the data to inform team and community action.
- Use data to draw conclusions and make informed decisions about your nearest coastline and the ocean in which your watershed empties.
- Share data and evidence with local and/or national citizen science platforms to improve coastal and marine systems understanding, conservation and management strategies.
- Communicate coastal and marine information to the larger school community and engage the community in supporting campaigns and initiatives.
- Age appropriately, discuss the societal and economic impacts associated with ocean stewardship, remembering that education for sustainable development addresses not only the environment but the impacts within society and the economy.

INTERDISCIPLINARY CONNECTIONS

Art, Citizenship, Language Arts, Math, Science, Social Studies, Specific CTE and STEM programs

ECO-SCHOOLS USA PATHWAY CONNECTIONS

Biodiversity, Climate Change, Consumption and Waste, Energy, Water, WOW-Watersheds and WOW-Wetlands



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METRICS NEEDED FOR AWARDS

1. How many actions did students take to improve ocean health?

UN'S SUSTAINABLE DEVELOPMENT GOALS – CONNECTIONS TO PATHWAY

<http://www.un.org/sustainabledevelopment/sustainable-development-goals/>



ARE YOU A GLOBE SCHOOL?

The Global Learning and Observations to Benefit the Environment (GLOBE) Program is an international science and education program that provides students and the public worldwide with the opportunity to participate in data collection and the scientific process, and contribute meaningfully to our understanding of the Earth system and global environment. **Learn more at >>** <http://www.nwf.org/Eco-Schools-USA/GLOBE.aspx>

Below are protocol connections to the Ocean audit. (Optional, but recommended.)

Atmosphere Protocols

Aerosols | Air Temperature | Clouds |
Precipitation | Surface Temperature |
Water Vapor | Wind

Pedosphere Protocols

Characterization | Fertility | Infiltration |
Soil Moisture-Sensor or SMAP | pH |
Temperature

Hydrosphere Protocols

Alkalinity | Conductivity | Dissolved Oxygen |
Mosquitos | Nitrates | pH | Salinity | Temperature |
Transparency

Biosphere Protocols

Arctic Bird Migration | Green Up/Green Down |
Land Cover Classification |
Seaweed Reproductive Phenology



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MATERIALS

science notebook | Internet for research and data collection | pH test strips, probes or kits | soil and water temperature probes or thermometers | water and soil quality test probes or kits | transparency tube and/or Secchi Disk* | regional and/or state marine and coastal plant and animal field guides | IRT (infrared thermometer) | materials for litter pick-up | scale (litter weight)

*DIY Secchi Disk

- <https://zebrazapps.com/embed/#/b2f40eb4598249c19bc3028ca532eb55>
- <http://www.des.nh.gov/organization/divisions/water/wmb/vlap/documents/secchi.pdf>

PROCEDURE

Adult volunteers are highly encouraged to assist in audit facilitation and provide expertise as a part of the Eco-Action team.

1. Determine who the **resource specialists** are in your community, region or state. These individuals can assist with the audit and provide richer student experiences and deeper understanding.
2. Read through the audit first and set aside realistic periods of time to complete each section.
3. The Eco-Action Team will work together to gather the required audit data.
4. **Analyze the results** and **develop an action plan**. Be sure to **communicate** results, actions and outcomes throughout the entire process.
5. **Keep this audit** with your records. This information is needed when responding to Eco-Schools USA surveys, when applying for awards and when communicating with the community, school board and members of the media.

Your data and all evidence, including notes, photographs, sketches, calculations, audits, etc. need to be kept in a location that is easily accessible to the Eco-Action team. We recommend binder, file system or Google folder. Your documentation is very important and will be used:

- to inform decisions,
- to engage the community,
- as evidence to support findings,
- to update your dashboard, and
- to apply for awards.