Hands-on

STAR_net

Tested & Approved STEM Activities

CATCH! THE WORLD'S OCEANS

Activity Guide

STAR_net

Science-Technology Activities & Resources For Libraries

A product of the Science-Technology Activities and Resources for Libraries (*STAR_Net*) program.
Visit our website at www.starnetlibraries.org for more information on our educational programs.
Developed by the Lunar and Planetary Institute/Universities Space Research Association
August 2014

This material is based upon work supported by the National Science Foundation under Grant No. DRL-1421427.
Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

CATCH! — THE WORLD'S OCEANS

Overview

Children get to know each other through an icebreaker activity that introduces the importance of water on Earth. They stand in a circle and toss a soft Earth globe (such as an inflatable or stuffed globe), noting with each catch that his or her index finger usually touches an ocean rather than land. The percentage of Earth covered by oceans — roughly three quarters, or 71% — can be tallied by keeping track of the number of "land" and "ocean" contacts during the game.

Activity Time

15 minutes

Intended Audience

Families or other mixed-age groups, *with modifications for younger children*
School-aged children ages 5-7, *with modifications*
School-aged children ages 8-9
Tweens up to about age 13

Type of Program

☑ Facilitated hands-on experience
☐ Station, presented in combination with related activities
☐ Passive program
☐ Demonstration by facilitator

What's the Point?

- We live on a water planet.
- Oceans cover most (roughly three quarters, or 71%) of the Earth's surface.
- Oceans play an important role in weather and climate all over the world, even in locations far from the coast.

Facility Needs

- ☐ An area large enough for the children to be able to comfortably mingle and where a ball can be safely tossed
- ☐ Optional: Writing space viewable by the entire group, such as white board or poster paper and markers, or a black board and chalk

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Materials

For the Facilitator

- ☐ 1 ruler
- ☐ *Brief Facilitation Outline* (below)

For Each Group of 15 Children

- ☐ 1 inflatable Earth globe, or a Hugg-a-Planet Earth, purchased from a retailer such as www.peacetoys.com/Hugg-A-Planet-Collection/Hugg-A-Planet-Earth.html
- ☐ Optional: 1 calculator

Supporting Media

Consider setting up a digital media player (such as a computer), speakers, and access to the Internet to display websites or multimedia before, during, or after the activity.

Books

Explore Water!: 25 Great Projects, Activities, Experiments
Anita Yasuda, Nomad Press, 2011, ISBN 1936313421
Children ages 7–9 can use this guide to undertake activities and projects about water. Fun facts and text discuss topics such as states of matter, glaciers, salt and fresh water, pollution, and more!

Earth
Elaine Landau, Children's Press, 2008, ISBN: 0531147886
Children ages 9–12 may enjoy reading about Earth's place in the solar system, what Earth is made of, how water and air make life possible, and what a kid can do to fight global warming. Colorful images and fun facts accompany the easy-to-read text.

Videos

NASA's Climate Reel
http://climate.nasa.gov/imagesVideo/climateReel
This collection of videos and visualizations of climate change cover the four main Earth parts or systems explored in *Discover Earth*: water, ice, air, and life. Different videos may appeal to various ages.

Websites

Climate Kids: NASA's Eyes on the Earth
http://climate.nasa.gov/kids/
Children ages 8 to 13 may enjoy the information, games, and videos on this award-winning site.

National Geographic Education
http://education.nationalgeographic.com

There are multiple National Geographic resources relating to oceans and their influence on weather and climate. For instance, there are encyclopedia entries, with links to multimedia, text, and activities for “ocean,” “weather,” and “water cycle.”

Handouts

National Geophysical Data Center Origami Balloon
www.ngdc.noaa.gov/mgg/image/origamiearth.pdf
Origami enthusiasts, ages 8 and up, will enjoy making a 3-D globe of the Earth — from paper! The template uses satellite data from the National Oceanic and Atmospheric Administration (NOAA). Kid-friendly folding instructions are available from http://oceanservice.noaa.gov/education/for_fun/EarthOrigami.pdf.

Preparation

Six months before the activity

- Prepare and distribute publicity materials for programs based on this activity. If possible, build on the children's knowledge by offering multiple science, technology, engineering, art, and mathematics (STEAM) programs. See the STAR_Net resources listed at http://community.starnetlibraries.org/resources for ideas.
- Plan to adapt the activity based on the children’s ages and physical and mathematical abilities. Advertise the program separately to ages 5 to 7 (and their families) and to older children and tweens, and keep the ages separate. Or, if mixed ages will attend the program, separate into two groups guided by separate facilitators.

The day before the activity

- Prepare an area large enough for the children to be able to comfortably mingle.

Activity

1. Share ideas and knowledge.

- Introduce yourself and the library.
- Frame the activity with the main message: We live on a water planet.
- Invite the children to discuss:
  - How they use water in their daily lives;
  - Where water is found on Earth’s surface and in the air; and
  - Their guesses for how much of Earth’s surface is covered by water.

Use discussion to help children start to think about their prior experiences with water and build new understandings about oceans and their influence on weather and climate — even far inland. The children may recognize that water is found in our oceans, lakes, rivers, and groundwater (and frozen as snow and ice — such as in glaciers, ice caps, and sea ice). Plants and animals — including people — have water inside them. Water is also rain, the tiny droplets that make up clouds, and frozen as snow, hail, and ice. Water is also a gas in our atmosphere (water vapor).

2. **Invite everyone to stand in a circle and toss the Earth globe ball to each other.** Select a volunteer to serve as record keeper. Have the children follow these steps:
   a. Choose any single point on their bodies to keep track of during the game (e.g. right or left index finger or thumb, or even some other variation depending on the child and his or her physical abilities…as long as they are consistent!) .
   b. Introduce yourself and then toss the ball to someone across from you.
   c. Shout "ocean" or "land," depending on where their finger lands, thank the previous circle member by name, and state his or her own name. Record the number of "land" and the number of "ocean" contacts.
   d. Toss the ball to someone who has not yet had a turn.

For children ages 5 to 7 and their families, begin by discussing what the different colors on the ball mean (i.e. land or ocean). After each child has a turn, he or she will move outside of the circle to join one of two lines. Designate the area immediately behind one side of the circle as "ocean" and the other side as "land." After each child catches the globe and sees where his or her finger lands, he or she moves to one side or the other of the circle. Two lines will form as the game progresses. The game ends after each child has had a turn.

   e. Optional: Remember the order in which the ball is tossed — as well as the names of the circle members you receive the ball from and toss the ball to.
   f. Repeat the game (as time allows) three or more times to gather more data.

3. **Calculate the percentage of "ocean" contacts** (using a calculator, if desired), and compare that percentage to their earlier guesses about how much of Earth's surface is covered by water.

For children ages 5 to 7 and their families, discuss how the "ocean" line is longer.

4. **Have a brief discussion to connect the ball toss activity to the significance of Earth's oceans.** Summarize that the children's index fingers usually contacted ocean; and, indeed, 71% of the Earth's surface is covered by ocean! Guide a discussion about how the oceans influence the local region's weather — even if your region is far from the ocean.

Oceans Influence Our Regional Weather

Oceans influence winds, evaporate into the air (providing much of the moisture distributed across the globe by clouds), and absorb energy from the Sun — creating our local weather and providing warmth. Oceans help control what kinds of weather an area usually gets (i.e. its climate), such as whether rain, snow, or dry conditions are typical.

5. **Conclude.** Summarize that we truly live on a water planet, where even distant oceans have an influence on our local weather and climate. Encourage the children to make use of related library and community resources to explore the topic of weather further.

Correlation to Standards

National Science Education Standards

Grades K–4

Earth and Space Science – Content Standard D

Properties of earth materials

- Earth materials are solid rocks and soils, water (and ice), and the gases of the atmosphere.

Grades 5–8

Earth and Space Science - Content Standard D

Structure of the Earth System

- Global patterns of atmospheric movement influence local weather.
- Water, which covers the majority of the earth's surface, circulates through the crust, oceans, and atmosphere (and cryosphere) in what is known as the "water cycle."

Extensions

The Project WET Curriculum and Activity Guide

This guide to teaching about water resources provides fun, hands-on investigations and celebrations for children in grades K to 12. Find more information about this publication, and related training opportunities, at http://www.projectwet.org.

It's Your Planet — Love It!

www.girlscouts.org/program/journeys/your_planet/

Girl Scouts explore water, energy, and air quality through this program. There is a guide for Girls Scouts adult volunteers, as well as the following activity book:

Girl Scouts' WOW

Children ages 7-8 investigate water through this activity book, which discusses the water cycle and features female professionals in water-related professions. Offers suggestions for taking action to conserve water and protect water environments.

References

Water Cycle Lesson

http://inside.mines.edu/~lgallagh/Water_Cycle_Lesson_Plan_2010%5B1%5D.pdf

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Brief Facilitation Outline

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