

A DROP IN THE BUCKET

Description:

Students participate in a demonstration to estimate and calculate the available fresh water on Earth. Through this demonstration, students understand that fresh water must be used and managed carefully.

Objective:

- Students will understand how Omaha's local watershed contributes to regional, national, and worldwide water bodies.
- Participants will comprehend communities contribute to water pollution and actions they can take to reduce their impact.

Standards:

2nd Grade

- SC.2.13.3.D Obtain information to identify where water is found on Earth and that it can be solid or liquid.
- SS 2.3.3 Describe relationships between humans and the physical environment.
- LA 2.3.2 Listening: Students will develop and demonstrate active listening skills across a variety of situations.

3rd Grade

- SS 3.3.1 Explore where (spatial) and why people, places, and environments are organized in the world.
- SS 3.3.3.c Explain the importance of Earth's natural resources.

4th Grade

- SC.4.13.4.D Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.
- SS 4.3.1.d Differentiate between classifications of bodies of water, cities, and land masses.
- SS 4.3.5 Use geographic skills to make connections to issues and events.

5th Grade

- SC.5.13.4.B Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.
- SS 5.3.3.c Examine patterns of resource distribution and utilization in the United States.

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Materials:

Video

Optional: Globe

Optional: Measuring Tools and 1000 mL water

Background Info:

Approximately 71% of the Earth is covered in water. However, only a small amount of that water is clean, fresh water. In some places, like Nebraska, there is plenty of available water for people to use. Nebraskans are fortunate to have the Ogallala Aquifer and several other aquifers as natural resources in the form of ground water. In other places on the globe, water is scarce.

The Nebraska NRD (Natural Resource District's website states: "Farmers, ranchers, urban residents, industries, recreationists, livestock and wildlife all depend on Nebraska's most precious natural resource – water. Water is vital to life. Thanks largely to the High Plains Aquifer, Nebraska has more groundwater than any other state. Above ground, the state is laced with 24,000 miles of flowing rivers and streams. Nebraska's major river basins include the Missouri, Platte, Niobrara, Loup, Republican, Elkhorn, Nemaha and Blue. Though it is plentiful and usable, Nebraska's water is neither infinite nor immune from pollution. Irrigators, cities and villages, industries and wildlife all compete for this precious resource. Contamination may come from sediment, farming chemicals, urban runoff and industrial sources."

Activity:

1. Show students the video.

Optional variation: Before or after showing the video, or in lieu of it, allow students to use the measuring tools provided to lead their own demonstration.

- Fill the largest beaker with 1000 ml of water. This represents all the water on earth. Have students look at the globe to visualize where this water is located on Earth.
- Pour 30 ml into the next largest beaker. This represents all of Earth's fresh water – this is 3% of the total water on Earth. Add salt to the remaining 970 ml of water in the largest measuring cup.

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Activity Cont:

- Almost 80% of the freshwater on earth is frozen in ice caps and glaciers. Pour 6 ml of water into the smallest beaker. If possible, place the remaining 24 ml from the second beaker in a freezer.
 - The 6 ml of water represents the non-frozen fresh water on Earth. However, most of this water is deep underground and inaccessible, or it is too polluted for people to use.
 - Carefully release a single drop of water on a student's hand or on a desk using the pipette. That single drop, about 0.003% of the total water on Earth, represents the clean, fresh water that is not deep underground, polluted, frozen, or saltwater.
2. Divide the students into small groups. Distribute student handout pages.
 3. Students should discuss their thoughts prior to writing their answers.

Assessment:

Completed student handout pages