

SCIENCE MUSEUM OF MINNESOTA

WATER RESIDENCY, GRADES K-2



Concepts, Learning Goals, & Logistics

Overview

Students perform hands-on investigations to develop deeper understanding of principles introduced in the Water K-2 Assembly in two different sessions. Each session is taught independently of the other.

Water Changes Session

Students conduct a variety of experiment to explore how water can change between liquid, vapor in air, and solid. They investigate the effects of heat and wind in the evaporation process and observe how colder temperatures makes water condense on objects. A high point of the class is creating a cloud that students hold in their hands. Clouds then leads to considering different kinds precipitation: rain, snow and hail. An optional experience to is create rain in the classroom with a demonstration that incorporates evaporation, condensation and precipitation.

Science Learning Goals

- Imagine what happens to a puddle of water on a sunny or windy day.
- Conduct experiments to facilitate understanding of how water can change forms.
- Explore the differences between precipitation, evaporation, and condensation.

Vocabulary Introduced:

- Evaporation, Precipitation, Condensation

Waste Critters Session

Students observe a variety of live macroinvertebrates collected from area streams or ponds. They learn to recognize the different animals by finding them in plastic bins and matching them to a picture. Students create a group chart with the pictures of the “critters” they identified. They learn that different species can live in varying conditions – some can tolerate somewhat polluted waters, some slightly polluted, and others must live in very clean water. From the results on their chart, the group determines the pollution level of the critters’ pond or stream water.

Science Learning Goals

- Investigate, collect, describe, compare and identify live macroinvertebrate (bottom dwelling) river or pond organisms. Track the varieties in a chart.
- Interpret varieties of organisms’ data to understand how an animal’s habitat provides for its basic needs.
- Recognize the importance of having clean water for macroinvertebrates to live.
- Plants, animals and people need clean water to live.
- Scientists make observations about water and how water changes.

Vocabulary Introduced:

- Macroinvertebrate/Critter, Pollution, Habitat, Data

If you have further questions on bringing programming to your school, please contact our Outreach Registration Coordinator at (651) 221-4748 or schooloutreach@smm.org.

Program Length: 50 minutes

Audience Size: Up to 30 students

Preparation: Science Museum instructor brings all needed equipment and materials. School provides two tables for assembly demonstration and access to electricity. Allow 60 minutes before and after program for set-up and take-down. School provides classroom space for the residency sessions. Materials can be moved from room to room, or taught in a designated space with tables and chairs for students and two tables for teaching materials and equipment.

Standards

MN Academic Standard Strand

The Nature of Science and Engineering: (0.1.1.2.1; 1.1.1.1.1; 2.1.1.2.1)

Earth and Space Science: (0.3.2.2.1; 0.3.2.2.2; 2.3.2.2.1)

Life Science: (0.4.1.1.1; 0.4.1.1.2; 1.2.1.1.1; 1.4.2.1.1; 1.4.2.1.2; 1.4.3.1.1)

Next Generation Science Standards

Disciplinary Core Ideas:

Conservation of Energy and Energy Transfer (PS3.B)

Weather and Climate (ESS2.D)

Life Science (LS1.C; LS2.C; LS4.D)

Earth and Human Activity (ESS3.C)

Biodiversity and Humans (LS4.D)

Science and Engineering Practices:

Planning and Carrying Out Investigations (K-PS3-1; 1-ESS1-2)

Engaging in Argument from Evidence (K-ESS2-2; 1-LS1-2)

Analyzing and Interpreting Data (K-LS1-1; 1-ESS1-1)

Crosscutting Concepts

Patterns (K-LS1-1; K-ESS2-1; 2-LS4-1; 2-ESS2-3)