

MAKE YOUR OWN WATERSHED

(MODIFIED FOR ADEED)

INSTRUCTIONS

Overview:

Students demonstrate their understanding of watersheds and the salmon's journey by building and describing a model of a watershed that could produce salmon. They write narrative stories about the journey of a salmon through their personal watershed, and explain and present to the class.

Objectives:

The student will learn the components of a watershed that can support life;

Targeted Alaska Grade Level Expectations:

Science

- [2] SB2 Students develop an understanding that energy appears in different forms, can be transformed from one form to another, can be transferred or moved from one places or system to another, may be unavailable for use, and is ultimately conserved.
- [2] SC2 Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms.
- [2] SC3 Students develop an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy.
- [2] SD1 Students develop an understanding of Earth's geochemical cycles.
- [3] SA1.1 The student develops an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating.
- [3] SA1.2 The student develops an understanding of the process of science by observing and describing their world to answer simple questions.
- [3] SA2.1 The student will demonstrate an understanding of the attitudes and approaches to scientific inquiry by answering, "how do you know?" questions with reasonable answers.
- [3] SA3.1 The student demonstrates an understanding that interactions with the environment provide an opportunity for understanding scientific concepts by: observing local conditions that determine which plants and/or animals survive. (L)
- [3] SD2.1 The student demonstrates an understanding of the forces that shape the Earth by: identifying and comparing a variety of Earth's land features (i.e., rivers, deltas, lakes, glaciers, mountains, valleys, and islands)
- [3] SG2.1 comparing the results of multiple observations of a single local event (L)
- [3] SG4.1 The student demonstrates an understanding that advancements in science depend on curiosity, creativity, imagination, and a broad knowledge base by: asking questions about the natural world.
- [4] SA1.1 The student demonstrates an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating.
- [4] SA1.2 The student demonstrates an understanding of the processes of science by observing, measuring, and collecting data from explorations and using this information to classify, predict, and communicate.
- [4] SA2.1 The student demonstrates an understanding of the attitudes and approaches to scientific inquiry by
- [4] SA3.1 The student demonstrates an understanding that interactions with the environment provide an opportunity for understanding scientific concepts by identifying the local limiting factors (e.g., weather, human influence, species interactions) that determine which plants and/or animals survive. (L) supporting the student's own ideas with observations and peer review. (L)
- [4] SC1.1 The student demonstrates an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution by showing the relationship between physical characteristics of Alaskan organisms and the environment in which they live.

[4] SC2.2 The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by describing the basic characteristics and requirements of living things.

[4] SC3.1 The student demonstrates an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy by identifying examples of living and non-living things and the relationship between them (e.g., living things need water, herbivores need plants).

Materials:

- Several 9" x 12" aluminum baking pans, plastic trays, or shallow planting trays
- Clay, play dough, or salt dough
- Student-collected gravel, twigs, grasses
- Watercolor paints, brushes, and paper
- Construction paper
- Scissors
- Glue
- STUDENT WORKSHEET: "Water Investigation"
- STUDENT WORKSHEET: "Salmon Needs Chart"

Prior Student Knowledge

Students will be demonstrating the knowledge they acquired about watersheds and salmon habitat in Investigations 1-4.

Activity Preparation

Gather a variety of materials for students to use as they create their representation of a watershed.

Activity Procedure:

Engagement: (20-30 minutes)

Reflect on the field trip, and/or read a book about salmon, then review students' knowledge of the components of a watershed and the conditions that support salmon in a watershed. Write these on the board, on chart paper, or have students record them in their science notebooks. You may use these items to create a scoring guide for their watersheds. Tell students they will be creating a representation of a watershed that can support salmon. They may choose the manner in which they create the watershed. They might choose to create a 3-D model, painting or drawing, poster, diorama, computer drawing or animation, PowerPoint presentation, or something else. Ask them to be thinking about their creation and to bring any special materials they may need (moss, sticks, gravel, etc).

Exploration: (2 class periods)

Allow 2 class periods for students to create their representation of a watershed that can support salmon. During class or as homework, have them write a story of the journey of a salmon through their watershed.

Explanation: (30 minutes + time for reading aloud)

Upon return to the classroom, have students meet in small groups, paste their data sheets into their science notebooks (if necessary) and share their notes from the fieldtrip.

Elaboration: (20 minutes)

Have students share their watersheds with parents, community members, other classes, etc. Explaining the parts of the watershed and the salmon's journey through it will help strengthen their understanding.

Extension Idea:

A class book and a nice reflection of the work that was done can be created by taking a photo of each model and printing out the salmon story to attach to the photo.

Curricular Connections:

Language Arts: Students may write a poem (haiku, diamante, etc.) to accompany the watershed.

Essential Questions:

1. How are we connected to wetlands, rivers and the sea?
2. What is the salmon's life journey through the wetlands, rivers and the sea?
3. Where does our local water come from and where does it go?

Enduring Understandings:

Watersheds, rivers, wetland and the one big ocean of the world are an interconnected system.

Tips from Teachers:

When students are asked to write a story of the salmon's journey, a jigsaw format with individuals writing for just one stage might save time and increase quality. Additional presentation possibilities might be:

- Draw cartoon panels of the salmon life cycle
- Make a flip book of the salmon life cycle
- Create a PowerPoint to illustrate a watershed or the water cycle

Evaluation:

Understanding can be assessed as students explain and present their watersheds and read their story. You can use the requirements brainstormed in the engagement section of this investigation as a rubric.

Lesson Credit:

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