

Elementary Climate Change: Lesson 1

Title of Lesson: What is a Watershed?

Grade Level: 2

Subject: Watershed

Source of the lesson:

http://www.iwla.org/docs/default-source/how-to/how_to_build_model_watershed.pdf?sfvrsn=4

Essential Question(s):

Are you part of an ocean habitat?

Massachusetts Curriculum Frameworks Science Standards:

2-ESS2-2: Map the shapes and types of landforms and bodies of water in an area.

2-ESS2-3: Use examples obtained from informational sources to explain that water is found in the ocean, rivers and streams, lakes and ponds, and may be solid or liquid.

Content Objectives: Students will be able to:	Practice Objectives: Students will be able to:	Language Objectives: Students will be able to:
Explain what a watershed is.	Create and use a watershed model. (Practice 2)	Orally describe their predictions and observations.
Describe what happens to rain after it falls.	Make predictions.	Write labels in a diagram of a model.
	Map their watershed model (Practice 8).	Listen for information in a class discussion and a video.
	Work effectively in a cooperative group.	Describe a concept in oral and written language.

Important Vocabulary: watershed, flow, model, map.

Materials Needed:

- Disposable aluminum cake pan or plastic bin (for each group of 4 students)
- Florist foam
- Aluminum foil
- Permanent marker (for each group of 4 students)

- Spray bottle with water (for each pair of students)
- Blue pencil (for each pair of students)
- Basin
- Science notebook (for each student)
- Computer with LCD projector or smartboard

Other Resources: (websites, videos, books, etc.)

<https://youtu.be/QOrVotzBNto>

Background Information for Teacher: This lesson introduces children to the concept of a watershed. A very basic definition of a watershed is an area of land that drains rainwater into a common body of water. For example, the Chesapeake Bay watershed is thousands of square miles of land and waterways that all eventually drain into the Chesapeake Bay. A watershed can also be a very small area that drains into a local pond or stream.

In this lesson, students focus only on rainwater. It prepares them for the next lesson, in which they will see how a watershed drains not only liquid water, but also sediments, animal feces, soap, and other solid and liquid materials.

Background Information the Student Needs to Access the Lesson: Students should be familiar with scientific models and the concept of modeling a natural process. If you have already taught *Pebbles, Sand, and Silt*, students have had experience modeling the process of weathering by rubbing rocks together.

Lesson Structure

Lesson Launch (Do Now)	Show students a picture of a sidewalk on a rainy day. Ask, "When it rains, where does the water go?" Students will likely come up with a variety of ideas such as, "It evaporates," "It goes into the ground," etc.
Background	Explain that many different things can happen to rainwater. Today, you

Instruction (pre-activity)	<p>will be creating a model to show one thing that can happen to rainwater.</p> <p>Before they model rain, they will first need to create the landscape that they will rain on. Show students the florist foam, cake pans, aluminum foil, and permanent markers. These will be the materials they will use to create their landscapes. Model how to create 2 tall mountains inside the pan with the foam. A river should run between the mountains down to an ocean. Make a shallow depression for the ocean to hold water. Cover it with foil. Use the permanent marker to draw a river running down from the mountains to an ocean.</p> <p>Have students divide into cooperative groups of 4. Give each group a cake pan, foam pieces, a sheet of foil about 1.5 times longer than the cake pan, and a blue permanent marker. Allow some time for them to build the models.</p> <p>Next, have them sketch a map of their landscape in their science notebooks. They should only use a standard pencil for this. Have them label the landforms. Model this process on the board.</p>
Activity	<p>Show students the spray bottles. Ask them what they think will happen when they make it rain on top of their mountains. Where will the water go? Have them illustrate their predictions using a green colored pencil. Have them share their predictions with their neighbors.</p> <p>Model how to use a spray bottle. Divide each group in half. Explain that each pair will share a spray bottle. Their task is to observe what happens to the rain after it hits the ground. Give out the spray bottles and let the rain begin. Circulate to check for engagement and understanding. Ask questions such as, "What's happening to the rain on the ground? Is it moving? Where is it going? Is it doing the same thing you thought it would?"</p> <p>After about 5 minutes, give each group two blue pencils. Tell the children that they should now take turns adding to their maps while their partner sprays the model. They will use the blue color to show exactly what they are observing. How is the water moving? Allow about 5 additional minutes.</p> <p>Tell students it's time to clean up. Explain that they will use their same watershed models again in the next lesson, so it's important that they label them with their group names. Collect the spray bottles. Have a student circulate with a basin to collect the "rainwater" from each group. As the rainwater gets emptied, collect the models.</p>
Discussion/ Debrief	<p>Ask students what they observed. Have them study their maps. Did the water go where they expected? If not, what was different?</p> <p>Why did the water move where it did? <i>It moved down the mountain. Other water pushed it.</i></p>

	<p>Where did the water finally end up? <i>In the ocean.</i> How did it get there? <i>It traveled down the river.</i></p> <p>Explain that students made a model of a watershed. Have students chorally chant the word and clap out the syllables. Tell them that a watershed is an area of land that drains into the same body of water. Ask,</p> <p>What body of water did the land drain into in our watershed? <i>The ocean.</i> If students say the river, tell them that they are correct, however, ask them where the river drains into. They should say that the river drains into the ocean.</p> <p>Tell students that they will now watch a short video to help them understand what a watershed is. Show students the short video, <i>What is a Watershed?</i></p> <p>https://youtu.be/QOrVotzBNto</p> <p>Depending on your class, you may want to show this video twice.</p>
Formative Assessment	<p>On an exit ticket, have students answer the following 2 questions using words and/or pictures:</p> <ol style="list-style-type: none"> 1. What is a watershed? 2. What might happen to rainwater after it hits the ground?