

Stage 1: Desired Results

<p>Established Goals: PS 2.1c Describe and illustrate the natural processes by which water is recycled on earth</p>	
<p>Enduring Understandings:</p> <ul style="list-style-type: none"> • A watershed is a land area whose runoff drains into any river, stream, lake, or ocean. • Water goes through a natural process of recycling. • Watersheds transport water over the earth's surface. • Water flows from higher to lower elevations. • Humans can affect water runoff by polluting. • Water flows through watersheds in channels. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> • What is a watershed? • What is a channel? • How is water naturally recycled? • Does pollution have a positive or negative impact on water runoff? • What is the purpose of a watershed?
	<p>Students will be able to:</p> <ul style="list-style-type: none"> • Define watershed. • Explain what purpose a channel serves. • Explain the process of runoff and how that contributes to water recycling. • Describe the ways humans can effect water runoff.

Stage 2: Determining Evidence for Assessing Learning

<p>Performance Tasks:</p> <ul style="list-style-type: none"> • Students will review with the teacher what they already know about water recycling and runoff. • Students will make observations about the imitation watershed. • Students will complete a lab sheet during the lesson. • Students will complete a worksheet where they will draw arrows showing the direction of water flow in a watershed. 	<p>Other Evidence:</p> <ul style="list-style-type: none"> • The students will be ordering the events independently to finalize their understanding. • Students will complete a homework assignment on volcanoes. • Students will reflect independently in their science journals about 3 different things they learned about watersheds. • Students will actually visualize the flow of water in the container from higher to lower elevation.
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Stage 3: Learning Plan: **The teacher will do steps 1-5 before students arrive.**

1. Fill a large container with small pebbles or gravel to about two inches high. Form the gravel into a slope that that one end is higher than the other end.
2. Mix together clay and sand to create a more concrete substance. Add the mixture to the container over the gravel.
3. Carve a channel into the clay/sand layer- at the top carve two more channels that will flow into the main channel. (These represent the tributaries).
4. Use the extra mixture to form hills that can be placed throughout the watershed.
5. Cover a small, flat portion of the slope with a piece of wax paper (this will later be explained to the students as a representation of something similar to a parking lot).
6. When the students are present, the teacher will explain what they have done so far inside of the container. The teacher will explain that the pebbles represent the underground, the clay and sand is like the soil, and the carvings are channels and tributaries that transport the water from high to low.
7. What do you think is going to happen when water is added to the top of this slope? Where will the water go?
8. The teacher will fill the bottom of the container with water (about 2 inches) to where the clay/sand mixture begins. The teacher will explain to the students that this water is the water that has been soaked up and seeped into the soil.
9. Using a spray bottle to simulate rain, the teacher will spray water over the wax paper. The teacher will ask the students what they notice about the drops of water. Some water will soak into the mixture and some will run off the wax paper into the channel where it will show runoff.
10. Can anyone tell me why the water rolled off of the wax paper? How is this similar to when rain falls on a parking lot?
11. The teacher will have the students discuss what they have observed so far. The teacher will then pour more water into the top of the channel so the students can observe what happens then.
12. The teacher will record observations on the board.
13. The teacher will then sprinkle cocoa powder (pollution) over one side of the watershed. As the teacher pours water down the clean side, the water will run clear. As the teacher pours water down the polluted side, it will run brown.
14. What kinds of pollution are added to water in real life?
15. The teacher should ask the students why this happened and how this might happen in real life.
16. The students will take time at the end of the lesson to reflect in their science journals about their learning. They will be asked to sketch a watershed.
17. For homework, the students will fill in a worksheet in which they must draw in arrows representing the flow of water in a picture of a watershed.