EROSION BY PRECIPITATION

INSTRUCTIONS
Grade 7

Science Concept:

Precipitation can cause erosion of Earth's surface.

Objectives:

The student will:

- explain how precipitation can change Earth's surface;
- write generalizations about erosion of different ground materials; and
- make a poster with labeled diagrams that illustrates how precipitation causes erosion.

GLEs Addressed:

Science

[7] SD1.2 The student demonstrates an understanding of geochemical cycles by explaining the water cycle's connection to changes in the Earth's surface

[7] 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.

Writing

[7] W3.2.2 The student writes for a variety of purposes and audiences by writing in a variety of nonfiction forms (e.g., letter, report, biography, and/or autobiography) to inform or describe.

Vocabulary:

erosion - removal of material by water, wind, or ice.

precipitation - falling products of condensation in the atmosphere, as rain, snow, or hail; the amount of rain, snow, hail, that has fallen at a given place within a given period, usually expressed in inches or centimeters of water.

Materials:

- Colored pencils for creating diagrams
- Gravel
- Leaves
- Moss
- Sand
- Shallow pans (one per group)
- Silt
- Water
- Watering can (one per group)
- Science journals

Resources:

Bosak, S. (1991). *Science is*… Ontario, Canada: Scholastic Canada LTD.

Activity Preparation:

Locate areas outside that demonstrate erosion for use during Gear Up.

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Activity Procedure:

Please refer to the assessment task and scoring rubric located at the end of these instructions. Discuss the assessment descriptors with the class before teaching this lesson.

Gear Up

Process Skills: observing and communicating

1. Ask students to write in their science journal about what they know about precipitation and erosion.
2. Take the class for a walk near the school building to observe examples of erosion (see Activity Preparation). Students should observe what the ground looks like under the eaves, the waterspout – anywhere water has dripped because of precipitation.
3. Throughout the walk, question students about the vocabulary words (erosion and precipitation) and the observations they are making. When the class is back in the room, ask the students what they observed and why the erosion occurred. Write the responses on the board.

Explore

Process Skills: observing, describing, and predicting

4. Divide students into small groups. Explain groups will design and build at least two hills using the provided materials (see Materials) to test how precipitation affects erosion on a slope.
5. Ask students to write a prediction in their science journals, about what will happen to their hill once water is poured on their hills.
6. Instruct groups to build the first hill, pour water on it, record observations, and draw diagrams in their science journal.
7. After groups have built and tested one hill, ask them to build another hill, this time making one that won't erode as easily.
8. Ask students to write a prediction in their science journals of what will happen when water is poured on it, explaining what they did differently and why. Ask students to pour water on their hills and have them record their observations and diagrams in their science journals.

Generalize

Process Skills: inferring and observing

9. Ask the whole class the following questions and discuss:
    a. What did you observe happening to your hills?
    b. Did the size or shape of the hill change how the hills eroded?
    c. Did the hill typically erode in any place more than another?
    d. Where did the ground material go?
    e. How did your predictions compare with your outcomes?
    f. Why does water cause erosion?
    g. Which national park was formed largely because of water erosion?

Apply

Process Skills: communicating and making generalizations

10. You live on a hill and would like to start a garden. Write in your journal what you think you would need to do in order to keep your garden from eroding down the hill.

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RUBRIC

Assessment Task:

Create a poster that illustrates how precipitation causes erosion. The poster should include at least two labeled diagrams that show how precipitation causes erosion in different types of ground materials. Write at least two generalizations about the erosion of different ground materials. At the bottom of the poster write a paragraph with at least two examples explaining how precipitation changes Earth's surface.

Rubric:

Objectives	GLEs	Below Proficient	Proficient	Above Proficient
The student explains how precipitation can change Earth's surface.	[7] SD1.2	The student's explanation is not accurate and/or has less than two examples.	The student's explanation is accurate and contains two examples.	The student's explanation is accurate and contains more than two examples.
The student writes generalizations about erosion of different ground materials.	[7] SA1.1	The student writes less than two generalizations about the erosion of different ground materials.	The student writes two generalizations about the erosion of different ground materials.	The student writes more than two generalizations about the erosion of different ground materials.
The student makes a poster with labeled diagrams that illustrates how precipitation causes erosion.	[7] W3.2.2	The student draws less than two diagrams and labels them accurately.	The student draws two diagrams that are accurately labeled.	The student draws three or more diagrams that are accurately labeled.