

Sample Science and Literacy Task

Big Idea/ Topic (Science)

Erosion from Rainwater

Reading/ Writing Skills

Reading Skill: Finding the main ideas and details

Writing Skill: Explaining new ideas and new terms

Standard Alignment

Science Standard:

S5E1 Obtain, evaluate, and communicate information to identify surface features on the Earth caused by constructive and/or destructive processes.

- b. Develop simple interactive models to collect data that illustrate how changes in surface features are/were caused by constructive and/or destructive processes.

ELA Standards:

ELAGSE5RI2 Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.

ELAGSE5W2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

- b Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.
- d Use precise language and domain-specific vocabulary to inform about or explain the topic.

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Pre-Reading: Erosion

Activity 1: Hardy Hillsides

For this activity, students will model the effects of rainfall on a hill.

For part 1, each group will need a plastic bin or pan, roughly the size of a shoe box, potting soil or sand, a watering can or paper cup with holes in the bottom, and access to water.

For part 2, you will also need a set of small plants, with their roots intact. You can either buy these plants, grow them from grass seed, or dig up weeds such as clover, violets, dandelions, or others. While it would be best to have small plants for each group, you can also do this portion as a class.

Gives students their materials and the handout "[Hardy Hillsides](#)." Allow them to complete part 1 in their groups and part 2 either in their group or as a class demonstration.

Activity 2: Erosion Walk

Take a quick walk around your school yard to see if you can locate any patches of erosion, particularly in places that do not have plants. Lead your students on a walk to visit those places.

Teachers note: If an erosion walk on school grounds is not possible, students may use these [images](#) to complete the activity. Ask what they think may have happened to the dirt there and whether students see any similarities to the water paths from their lab.

Reading: Keeping Hold of the Best Dirt in Georgia

(Introduce the Reading) Tell students that the class is going to read an article that talks more about the changes they saw in the dirt in their “hill” and around the school and will help explain what they saw.

Reading Skill: Finding the Main Ideas and details

Tell students that the subheadings in an article can be useful for locating the main points that a text wants to make. Have students look for the subheadings in this article.

- Ask what word is in both subheadings (topsoil).

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- Ask them to take a guess as to where they might find a description of the word topsoil (in the opening paragraphs).
- If we talk about losing and keeping topsoil, it is probably important. Where would we expect to find why it is important? (Also opening paragraphs)

As they read, they should be watching for the main points that the text wants to make about topsoil and be thinking about how it is related to what they saw in their hillside model and erosion walk. Students may use this [graphic organizer](#) to assist in finding the main idea and supporting details.

Post-Reading: Explain

Writing Skill: Explaining new ideas and new terms

Activity 1: Make an Erosion Plan

Have students select one of the sites of erosion found at your school. If you did not have any erosion sites at your school, show them a picture of an erosion site, such as one of these [images](#).

Ask them to create a plan to reduce erosion on that site. They can put their plan in the middle of their [pre-writing page](#).

Activity 2: Explaining the plan

Tell students that they need to explain their plan to other students in order to advocate for it to be used. They should assume that other students at the school do not know about erosion or why it is a problem. They will need to explain clearly, using their science knowledge, what is happening and how to fix it.

Using the pre-writing page as a guide, ask students to consider what background information their readers will need to understand the problem. What information from the article would help them understand? What observations can they share that might be helpful? Finally, have them consider which science words they will want to include and how they will explain those words. You may wish to require the use of the words erosion and topsoil.

As an extension, allow students to read the plans and select a plan to implement. Make observations of the site over time to see how the solution is working.

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Print Ready Student Sheets

Pre-Reading Activity: Hardy Hillsides

Build a hill and see what happens when the rains come.

Part 1: Bare Dirt

1. Pile the dirt or sand in your container in the center to form a hill. Draw your hill in the box below.
2. Use your watering can or paper cup with holes to simulate rain. Let it rain all over your hill! Then draw the hill again.

Before Rain Drawing	After Rain Drawing

Did the water run down evenly during the rain? Or did more water run down some parts of the hill than others?

Can you see any paths where the water ran down? If so, describe one of the paths.

Part 2: Garden on a Hill

1. Rebuild your hill. This time, plant as many plants as you can in the dirt, making sure the dirt covers their roots. Draw your new hill below.
2. Let it rain again! Use your watering cup or paper cup with holes. Try to pour about the same amount of water that you used on your first hill. Then draw your hill again.

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Before Rain Drawing	After Rain Drawing

Describe how the water flowed on the hill with plants.

Were the water paths similar to the paths formed on your first hill? Why or why not?



Finding the Main Idea and Supporting Details:

Keeping Hold of The Best Dirt in Georgia

Introduction	Losing Topsoil	Saving Topsoil
Main idea:	Main idea:	Main idea:
Details:	Details:	Details:

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Pre-writing: Make an Erosion Reduction Plan

Describe your site. What is happening there? Why is it a problem?	
How would you solve the problem? Draw or explain your plan.	
Why do think that your plan will help? What information from the article, your observations, and your Hardy Hillside activity support your plan?	

What science words will you want to include in your writing?

Which words and ideas will you need to explain to your reader so they will understand your plan?

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Print Ready Article : Keeping Hold of the Best Dirt in Georgia

Keeping Hold of the Best Dirt in Georgia

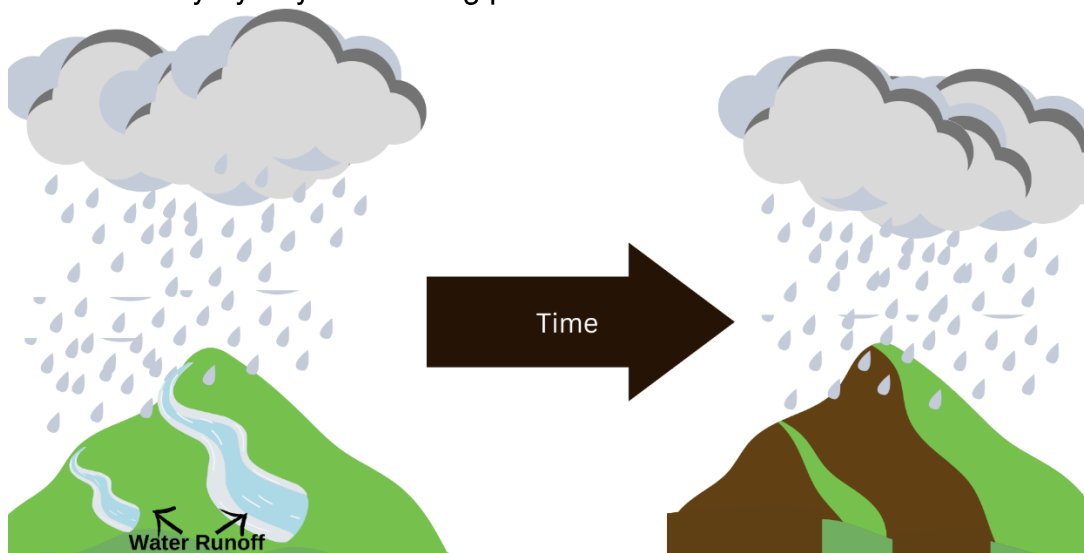
Dirt may just seem like dirt. But dirt, which scientists call soil, is a mixture. It has minerals, rock, and bits of dead plants, animals, and other organisms. Those dead bits are called organic matter, and organic matter is important. Organic matter contains many nutrients that plants need to grow.

Organic matter is mostly found in the top few inches of soil. This nutrient-rich dirt is called topsoil. Below the topsoil, the dirt is packed more tightly and has fewer nutrients. In much of Georgia, the dirt below the topsoil is heavy red clay, which is especially difficult for plant roots to penetrate. For this reason, keeping the topsoil intact is critical for everything from agriculture to lawns.

Losing Topsoil

The main cause of topsoil loss is rain. During heavy rains, water races across the ground. Topsoil is loose and easily swept up in the flow. When the earth is worn away by water or other forces, it is called erosion.

Water always runs downhill. This means that once water has made a track in the dirt, more water is likely to run into that same track. The rut gets deeper and deeper with each rainstorm. Soon, the erosion can be seen easily by anyone walking past.



When the water finally slows down, it dumps the topsoil it has been carrying. The soil may end up in a river. Too much soil dumped suddenly can make it difficult for fish to breathe. The soil may end up in a pond or lake. Over time, so much soil may end up in a pond or lake that it fills in and creates marshland.

Saving Topsoil

Georgians want to stop erosion and keep the topsoil in place. One solution is to make sure there are plants in the topsoil. Plant roots trap the soil, so it is harder for it to wash away. They also serve as a barrier to slow down the water. Slower water has less energy and picks up less soil. As the water slows, it also drops the soil it has been carrying.

People use other types of barriers to prevent erosion as well. People may place logs or rocks along hillsides that are starting to erode. Sometimes retaining walls are used to slow the flow of water. At construction sites, there is often black cloth hung between sticks. This is called silt fencing, and it helps keep water from carrying away the dirt that has been stirred up by construction.

Erosion is a natural process. It can be destructive when it removes topsoil and tears up a hillside. It can be constructive when it dumps dirt in a new place and creates a new marshland. However, sometimes these changes to the Earth cause problems for people, such as the loss of topsoil. Georgians can use plants and barriers to help control erosion so that Georgia will have topsoil for the future.



Erosion Images



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