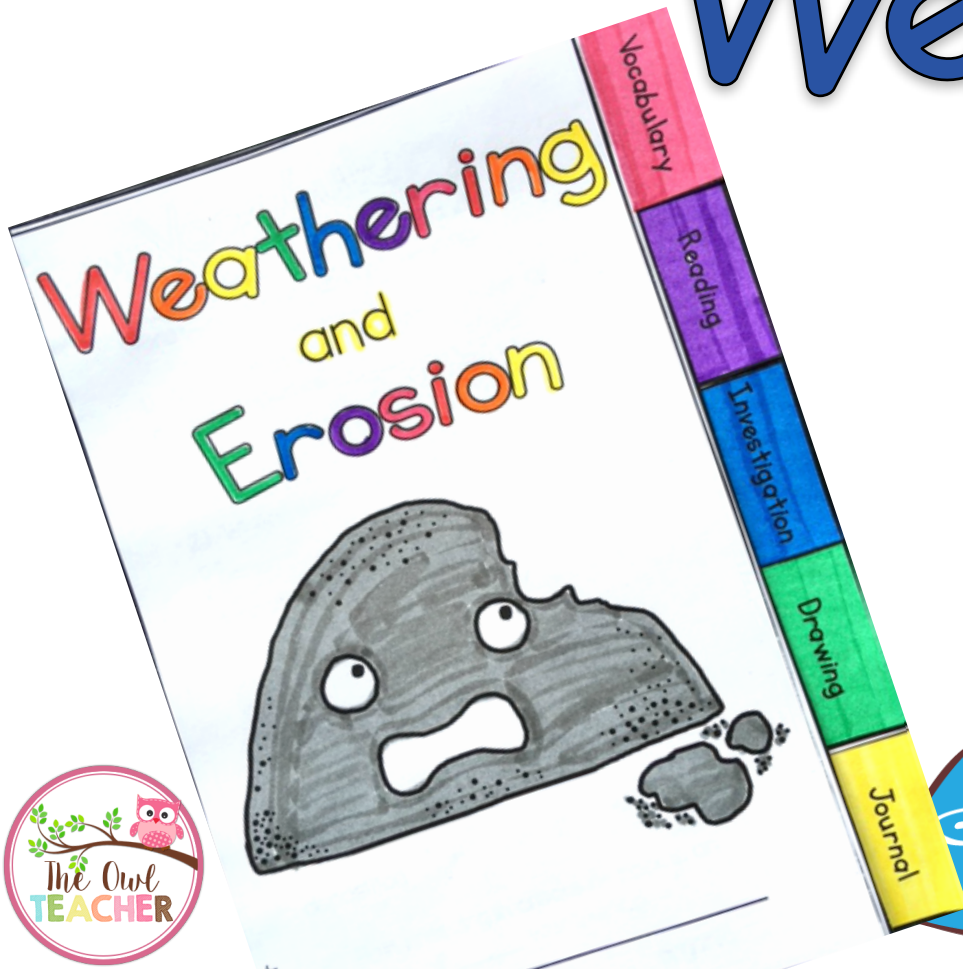


Science Booklets

Differentiated & Student Centered

Weathering and Erosion



Teacher's Page

Unfortunately, with the large demands on reading and math from Common Core, science is often pushed to the side. If your district is like mine, you often have very little time to dedicate to science, yet are still expected to fully cover the entire curriculum. This packet was created to help save time and to cover the all important science concepts - all while still meeting the nonfiction criteria of Common Core.

In this packet you will find a mini-book for students to assemble and explore the critical science concepts. It can be used to teach, reinforce, and/or challenge students, all while meeting their needs and learning styles. The reading page has been differentiated for your students with one being a higher level (two stars) and the other being a lower level (one star).

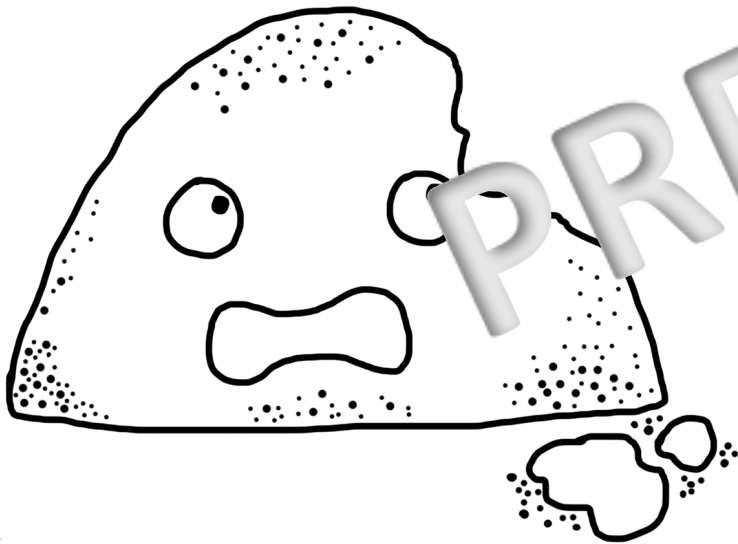
The tabs in this booklet can be used as science stations. The first tab contains an important vocabulary activity related to the science concept of weathering and erosion. It can correspond with the reading piece provided. The second tab asks comprehension questions related to the reading piece and requires students to support their answers with textual evidence. The third tab focuses on the investigation to deepen the understanding of weathering and erosion and how it works. Additionally, this tab explains the investigation more thoroughly. The fourth tab asks students to draw while the fifth tab prompts students to respond to a thought-provoking journal question.

I personally use all of my products in my classroom and can testify to the effectiveness of them.

Easy Use:

- Print pages 3-5 single sided (two sided copying will not work). Also print page 9 and/or 10 for students to use as their reading piece and page 11 for station use.
- After making class copies, provide each student with scissors and a glue stick. You can also staple or tape if you prefer.
- Have students color before cutting - including the tabs. This makes the piece look attractive.
- Have students cut out all flipbook pages. The cover page goes first. Then the students should line up the tabs for each page, in view, similar to steps.
- Have students run a line of glue along the left edge of each sheet. When finished, the final product should resemble a small tabbed notebook.
- Have students complete each page individually, in pairs, in groups, or as a whole class. This can also be used in small groups with your direction.

Weathering and Erosion



Scientist: _____

Vocabulary



Directions: Read each definition and circle the word below that has that meaning.

1.) A force that pulls toward the center of the earth is known as _____.

weathering erosion gravity

2.) When weathered rock is dropped off is known as _____.

deposition erosion gravity

3.) Acid rain destroying tombstones is an example of _____ weathering.

physical chemical organic

4.) When broken rock is carried away by wind, water, ice, or gravity, this is known as _____.

deposition weathering erosion

5.) Rain freezing in cracks of rock is an example of _____ weathering.

physical chemical organic

Reading



Directions: Read the sheet titled "The Art of Weathering and Erosion" and then answer the following questions with complete sentences. Be sure to support your answers.

- 1.) What is the difference between weathering and erosion?

Weathering breaks the rock down
while erosion carries it away.

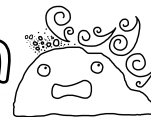
- 2.) What types of weathering are there?
Explain each type.

Mechanical - where it is broken down
physically; Chemical - where it is broken
down with chemicals such as acid
rain.

- 3.) What helps erosion besides glaciers?
Wind, water, and gravity.

Reading

Investigation



Directions: Follow the directions on the Investigation sheet and then write your response below.

- 1.) Look at the three molds - soil and grass, dirt, and sand. Predict which mold you think will have the most weathering and which you think will have the least. Explain why.

Answers will vary based on students'
predictions. Look for reasoning.

- 2.) Pour the water on each mold. Describe what occurred.

The sand weathers very fast. The soil
with grass weathers the slowest.

- 3.) How did the grass help the soil?

The grass helped slow down the
weathering of the soil. It was like
cement.

Investigation

The Art of Weathering and Erosion

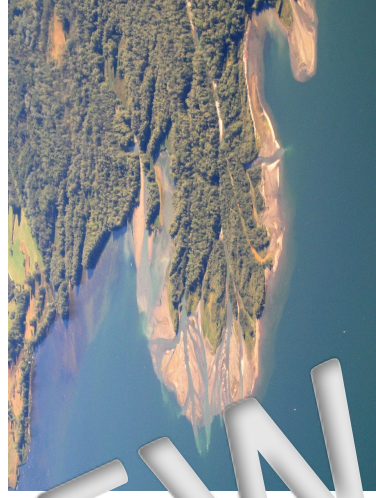
The earth is always changing and creating beautiful art forms such as the Grand Canyon in Arizona and the sea stacks of Australia. These changes happen slowly over time through the means of weathering and erosion.

Weathering is the breaking down of rocks into sand and soil. This can happen when rain seeps into a crack, then freezes and expands. This causes the rock to weather more. When weathering occurs physically, it is called **mechanical weathering**. Another example of weathering is when plants grow and their roots stretch out. Roots are really strong and can break rocks. Have you ever noticed a plant growing through a sidewalk? If you have ever walked through a cemetery before, you may have noticed some of the tombstones looked a bit worn. Over time, the rock becomes weathered from acid rain. This happens to statues too and is called **chemical weathering**.



This is an example of a rock that has split due to weathering.

Erosion works with weathering. It does not break down the rocks but it carries away rock. Erosion can be fast, such as during a landslide or a flood, or slow like in the Grand Canyon. Erosion can occur through gravity, water, wind, and glaciers. **Gravity** is a force that pulls toward the center of the earth such as during a landslide. Water can cause weathering by rubbing against other rocks as it's being carried away. Water can carry away sand on a beach causing beach erosion. Wind also causes beach erosion and even dust storms. Glaciers are the least common type of erosion. The Great Lakes that surround the state of Michigan were formed this way. Once erosion slows down, it drops its weathered rock and creates land forms. This is referred to as **deposition**.



The water carried sediment to the gulf where it was deposited.

The art team of weathering and erosion work together to create beautiful land forms on our earth. Weathering breaks down rock such as on cliffs or the mountain side, while erosion carries it away to drop it in another place. While it creates beauty in some places, it can ruin others.

Weathering and Erosion Demonstration Teacher's Page

(As a whole class demonstration or as group experiments)

You will need the following materials:

- 3 plastic or Styrofoam cups (one for each mold)
- dirt (from outside or from a garden)
- potting soil
- sand
- water
- grass
- aluminum pan or cookie sheet

Set Up:

- Ahead of time you will want to fill a bowl dirt from outside with a small amount of water and place it in a cup. The cup will create a "mold."
- Just like the previous statement, you will mix this with sand and water. You will likely need more water with the sand than you did with the dirt. Set it aside to dry.
- Just as the first two above, you will mix potting soil and water in a bowl, however, you will also mix in grass. Pour it into a cup and set it aside to dry.
- After a few days when the "molds" are dry, place the cups upside down on an aluminum pan or cookie sheet. When using Styrofoam cups, it is easier to just "peel" it away while keeping the mold intact.
- For the demonstration provide these three molds in a row sitting next to one another on the pan and water for the students to pour on the molds.
- If a mold falls apart, just attempt to reshape it. The sand sometimes dries faster than the others.

