



Weathering, Erosion, Landforms & Natural Disasters

Middle School Earth Science | Spring Module 2 | Lake Lotus Park

NGSSS Big Idea: Big Idea 6—Earth Structures

Over geologic time, internal and external sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's internal and external energy.

Benchmark Code & Description:

SC.6.E.6.1—Describe and give examples of ways in which Earth's surface is built up and torn down by physical and chemical weathering, erosion, and deposition.

SC.6.E.6.2—Recognize that there are a variety of different landforms on Earth's surface such as coastlines, dunes, rivers, mountains, glaciers, deltas, and lakes and relate these landforms as they apply to Florida.

SC.7.E.6.6—Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.

SC.8.N.4.1—Explain that science is one of the processes that can be used to inform decision makers at the community, state, national and international levels.

NGSSS Big Idea: Big Idea 7—Earth Systems and Patterns

The scientific theory of the evolution of Earth states that changes in our planet are driven by the flow of energy and the cycling of matter through dynamic interactions among the atmosphere, hydrosphere, cryosphere, geosphere, and biosphere, and the resources used to sustain human civilization on Earth.

Benchmark Code & Description:

SC.6.E.7.7—Investigate how natural disasters have affected human life in Florida.



LEARNING GOAL/OBJECTIVE

To learn the effects of weathering and erosion on landforms.



PREREQUISITES

Review:

- Vocabulary Words
- Applicable Textbook Sections



VOCABULARY

- Weathering
- Landforms
- Physical/Chemical Weathering
- Runoff
- Erosion/Sediment
- Deposition
- Flood plain
- Delta
- Stream/River



HANDS-ON ACTIVITY

Task(s):

Take measurements and document instrument readings.

Provided Materials:

- Stream Gauge
- Cubic Meter Box
- Turbidity Probe
- Flow Meter
- Labquest Meter
- Clipboard/Pencil

Career Options: Geologist, Environmental Engineer, Park Ranger, Biologist

Lesson Steps:

1. As students enter the woods, the instructor will begin the unit speaking about the rising up and wearing down of landforms in regards to chemical and physical weathering and deposition.
2. Students will then take measurements for:
 - a. Stream depth (stream gauge)
 - b. Velocity (flow meter)
 - c. Elevation
 - d. Turbidity
3. Lecture will continue and include information regarding oxbows, tributaries and the meandering of rivers.
4. Students will then head to the second location where they will gather more of the same types of data previously mentioned and be instructed in a discussion about the basic properties and principles of the erosion cycle.
5. While walking the students to the boardwalk, there will be discussion regarding occurrences of natural disasters (local or national) and their impacts on the environment.



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Over geologic time, internal and external sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's internal and external energy and material resources.



LEARNING GOAL/OBJECTIVE

To learn the effects of weathering and erosion on landforms.



DATA RECORD

Questions:

1. Weathering is the process that breaks down rocks and other substances. Erosion is the process by which bits of rock are carried away. Name two types of weathering: _____

2. What are the types of physical weathering? _____
3. What are the types of chemical weathering? _____
4. Where is the high energy in the section of the Little Wekiva River? _____
5. Where is the low energy section? _____
6. Which direction does the river flow? _____
7. What causes it to flow in this direction? _____
8. What processes shape the surface of the land? _____

	Site #1	Time	Site #2	Time
Flow Meter				
Stream Gauge				
Elevation				
GPS Reading	Latitude:		Latitude:	
	Longitude:		Longitude:	

The formula for figuring the discharge of the river is:

$$\text{DISCHARGE (Q)} = \text{CROSS-SECTIONAL AREA (A)} \times \text{FLOW VELOCITY (V)}$$

The DISCHARGE (Q) is expressed in cubic meters per second.

The CROSS-SECTIONAL AREA (A) is found by multiplying the depth of the river (in meters) by the width of the river (in meters) with the product expressed in square meters.

The FLOW VELOCITY (V) is found by using the following formula:

$$\text{Water Velocity (V) in meters per seconds (m/s)} = (0.000845 \times C) + 0.05$$

(C) is the counts per minute as observed on the flowmeter by students.