

Learning Objective: Weathering and Erosion

NGSS Standards:

MS-ESS2.C-5: Water's movements - both on the land and underground - cause weathering and erosion, which change the land's surface features and create underground formations.

Objective:

Students will be able to:

1. Define weathering and erosion.
2. Identify features caused by weathering and erosion.

Time Required: 60 minutes

Materials Needed:

- 1 computer/laptop/iPad per student with internet access
- 1 teacher computer with projector and internet access
- Sand
- Ice
- Paint trays (at least 6)
- Water
- Small pebbles
- Larger Rocks
- Graduated Cylinders
- Straws
- Copies of Handouts

Teacher Preparation:

- Create Playlist 1, a 25 minute [playlist](#) in [Legends of Learning](#) using the following game found in the Weathering and Erosion Learning Objective:
 - *Walter's Travels - Weathering and Erosion*
- Create Playlist 2, a 10 minute [playlist](#) in [Legends of Learning](#) using the following games found in the Weathering and Erosion Learning Learning Objective:
 - *Memoria: Weathering and Erosion*
 - Five post-game assessment questions
- Copy of Weathering and Erosion handout (attached)
- Prepare a layer of sand in paint trays

Engage (5 mins):

1. Introduce the topic for the day with the following Crash Course for kids: <https://www.youtube.com/watch?v=R-lak3Wvh9c>

Explore (10 minutes):

1. Have several stations set-up where students can interact with elements of weathering and erosion. As students interact with each station, they will write their observations on the Weathering and Erosion Handout.
 - a. In a paint tray, have sand and varying sizes of rocks and a small valley carved

out with a pencil. Have students pour water from a graduated cylinder and observe what happens to the land.

- b. In a tray of sand and varying sizes of rocks, have students push around chunks of ice and observe what happens to the land.
 - c. In a tray of sand and varying sizes of rocks, have students use a straw to *gently* blow the sand from one side to another.
2. Possible ways to guide discussion afterwards:
- a. Which station(s) represented erosion by water? *Station A* What happened to the sand? *Some is eroded down the stream, it is deposited at the base.* What would the landform that was created be called in nature? *River Basin, Delta/Alluvial Fan*
 - b. Which station(s) represented erosion by ice? *Station B* What happened to the sand? *The sand was eroded.* What would the landform that was created be called in nature? *A u-shaped valley, load/till/moraines*
 - c. Which station(s) represented erosion by wind? *Station C* What happened to the sand? *It was eroded and deposited elsewhere.*
 - d. What did you learn about the movement of larger materials? *Answers will vary depending on the kid and prior knowledge.*

Explain (25 minutes):

1. Have your students [sign in to Legends of Learning and enter your teacher code](#).
2. [Launch](#) Playlist 1 to your students.
3. As students complete *Walter's Travels - Weathering and Erosion*, they should fill out the notes portion of the Weathering and Erosion Handout.

Elaborate (10 minutes):

1. Based on the tray stations from before and what you learned in the game, have student groups brainstorm ways to reduce the erosive forces within one of the stations.
2. Have each group share their thoughts and discuss the feasibility of different approaches.

Evaluate (10 minutes):

1. Have students [sign in to Legends of Learning and enter your teacher code](#).
2. [Launch](#) Playlist 2 to your students.
3. Use progress on *Memoria: Weathering and Erosion* and five follow-up questions to assess student understanding the water cycle.
4. Assist students as needed during game play, pause playlist if you need to address content or questions to entire class.

Additional Lesson Strategies:

- To use Legends for additional instruction, create a [custom playlist](#) with an [instructional game](#) and pre and post [assessment](#).
- To use Legends for a quick formative assessment, create a 5-question [assessment](#) in a [playlist](#).
- To use Legends for a student-directed experience, create a [targeted freeplay](#) playlist.



- Encourage students to play on their own at home in [Legends of Learning: Awakening](#) for a student-driven experience including avatars, battling, and quests all centered around topics they are covering in class.

Name: _____ Date: _____

Weathering and Erosion Handout

Stations

* Write down what you observe at each station.

- A. _____

- B. _____

- C. _____

Weathering and Erosion Notes

- 1. _____ breaks things down and _____ carries them away.
- 2. What are the two types of weathering? _____
- 3. How are these two types of weathering different?

4. _____ is the most common type of mechanical weathering. It can be caused by gravity, moving water, strong winds, volcanoes, or even glaciers.

5. _____ is when water fills the cracks within a rock and freezes, causing the crack to grow and for the rock to eventually break apart.

6. What is one example of a rock type that is hard to break down? _____

7. What is one example of a rock type that is easier to break down? _____

8. _____ can weather and erode coastlines.