



Reshaping the Earth

Collaboration

Stage 1 - Desired Results

Standards

AERO: Science (2012)

End of grade 8

ESS.2 History of the Earth

ESS.2 Students will understand scientific theories of how the earth's surface is formed and how those theories developed. ESS.2.8A: By the end of Grade 8, students will explain how earth events (abruptly and over time) can bring about changes in Earth's surface: landforms, ocean floor, rock features, or climate.

- (Erosion and Weathering) 7. Evaluate slow processes (e.g. weathering, erosion, mountain building, sea floor spreading) to determine how the earth has changed and will continue to change over time.
- (Erosion and Weathering) 8. Evaluate fast processes (e.g. erosion, volcanoes and earthquakes) to determine how the earth has changed and will continue to change over time.
- (Earth's Features) 8. Explain how natural processes (including weathering, erosion, deposition, landslides, volcanic eruptions, earthquakes, and floods) affect Earth's oceans and land in constructive and destructive ways.
- (Changes in Landforms) 9. Illustrate the creation and changing of landforms that have occurred through geologic processes (including volcanic eruptions and mountain- building forces).

Science Performance Expectations (NGSS, 2013)

MS Earth & Space Sciences

MS.History of Earth

Performance Expectations

- MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

DRAGONS

DRAGONS

- Navigate the present, consider the future

Enduring Understandings

Overarching:

Changes to the Earth's surface can take place in seconds, or over millions of years.

Topical:

Essential Questions

Overarching:

How will the Earth's surface change over my lifetime?

Topical:

What are the forces that change the landscape?
 How does the hydrosphere affect the geosphere?

Weathering and erosion change the landscape by breaking apart and moving rocks around.

What happens to mountains over time?

Knowledge

The student will know...

SWK:

- Slow processes such as weathering, erosion, mountain building, sea floor spreading
- Fast processes such as erosion, volcanoes, earthquakes
- The difference between weathering and erosion
- Main processes of weathering (mechanical and chemical)
- The difference between erosion and deposition
- The main processes of erosion (moving water, ice, wind and gravity)
- How weathering and erosion has affected areas around the world (Jeju, Grand Canyon, Rocky Mountains etc)

Skills

The student will be able to...

SWBAT:

- Compare and contrast how weathering and erosion has affected the surface of the Earth
- Demonstrate and explain how water (ice and moving water) change the landscape
- Identify landforms created and changed by weathering and erosion
- Predict how slow and fast processes will change a landform over time
- Distinguish the effects of slow processes vs the effects of fast processes on landscapes
- Recognize landforms that have been formed and changed by weathering and erosion
- Explain how slow and fast processes work together to change the landscape
- Investigate the changes water and wind act on the land

Stage 2 – Assessment Evidence

Assessments

Pre-assessment

Formative: Other: Quiz

Pre-assessment on Schoology before unit start. All standards used, not as a grade.

Mint Lab

Formative: Performance: Lab Assignment

Students connected prior knowledge with breaking down mints in their mouths under different conditions to weathering.

Weathering and Erosion Reading

Summative: Other: Quiz

Levelled reading groups for students to read about Weathering and Erosion and short quiz to show understanding in Schoology.

Erosion Stations

Formative: Performance: Lab Assignment

5 lab stations designed for students to understand how water and wind affect the land.

Progress Monitoring Quiz

Summative: Other: Quiz

Progress monitoring quiz over the lab stations and what has been learned so far.

Performance Tasks (GRASPS)

Beach Erosion

As a team, you are a urban planning company that has been given the task of designing ways to keep the beach from Galchi's from eroding. You and your team to decide and design how prevent beach erosion, reclaim some of the beach from the sea and explain to the town what would happen if they do not follow your plan. You will create a 3 - 5 minute presentation of planned design including how the beach will look with your changes and without your changes. Everyone will need a speaking part.

Things to include:

- How weathering, erosion and deposition change the land.
 - How they work
 - Picture examples
- How the beach looks now
- How the beach will look with no help to stop the erosion
 - How erosion and weathering affect beaches
 - Like 50 years in the future
- What changes should be made to the beach
- WHY they should be made
 - Why does that change help the beach?
- Pictures drawn to scale
- Pictures of each idea and how it could help Galchi's beach

Stage 3 – Learning Plan

Learning Activities

Engage:

- Mint Lab (identify erode, weathering and deposition)

Explore:

- Weathering Chalk Lab (Chalk v Sandpaper, Chalk v Vinegar)
- Weathering, Erosion, Deposition Lab Stations (5 Stations, huge mess)
- Stream Tables
- Songgakson Field Trip (cliff by the beach)

Explain:

- Leveled readings
- Identification of weathering, erosion and depositon on Field trip


Elaborate:

- Landforms webquest

Explain:

- Galchi's Beach GRASPS

Resources

1. **Brainpop**, Brainpop.com
2. **Gizmos**, Explorelearning.com
3. **Erosion Activities**:  <http://geology.com/teacher/erosion.shtml>
4. **CK-12.org**, Online Text

ELL Strategies

Reflection

JAn 2015 - Stage 1 complete