Erosion and Weathering

Summary

This lesson will demonstrate assessment techniques (pre, formative, post). This lesson will also identify and address misconceptions and the difference between weathering and erosion.

Additional Core Ties

English Language Arts Grade 5

Writing Standard 1

Time Frame

1 class periods of 60 minutes each

Group Size

Small Groups

Materials

- 1 bag of playground sand (20 lbs)
- 10 clear plastic cups
- Hot plate
- Salt (5 lb. bag)
- Access to water (tap water is fine)

Background for Teachers

Weathering is the breaking down of rocks, soils and minerals through contact with the Earth's atmosphere and waters. Weathering occurs with no movement and should not be confused with erosion, which involves the movements of rocks and minerals by agents such as water, ice, snow, wind, waves and gravity.
Erosion is the process by which soil and rock are removed from the Earth's surface by natural processes such as wind or water flow, and then transported and deposited in other locations.

Student Prior Knowledge

Students need some exposure to examples and non-examples of weathering and what causes weathering.

Intended Learning Outcomes

2. Manifest Scientific Attitudes and Interests
e. Seek and weigh evidence before drawing conclusions.
Intended Learning Outcome - Linked to Standard:
Scientific attitudes, interests, and misconceptions will be manifested students observe and analyze experiment of erosion weighing evidence before drawing conclusions.

Instructional Procedures

Introduction / Class discussion
:
Ask students what is the difference between erosion and weathering. After discussion and clarification of the difference between erosion and weathering, take students through the Scientific

Method to discover and observe the effects of freeze/thaw cycle on weathering.
Question:
How does repeated exposure to freeze/thaw cycles effect the breaking down rock?
Hypothesis:
If rock is repeatedly exposed to freeze and thaw cycles, then the rock will break down and show how weathering occurs because water expands when it freezes.
Materials:
See above
Procedures:

Students in small groups will make sandstone with above listed materials.
Students will take the clear plastic cup, fill half way with sand, then add super saturated salt water mixture until it is level with the sand.
Leave cup out for 2 weeks to have salt water mixture evaporate.
Remove sedimentary rock from cup and put on a plate.

Freeze/Thaw Cycle
: Add a few drops of water to top of the sandstone. Freeze sandstone. Unthaw sandstone and make observations. Repeat Freeze/Thaw Cycle with observations four more times.
Results:
Students will analyze their observation and relate the results to their hypothesis. Student can show results by taking pictures of each observation and/or measure mass largest piece of sandstone.
Conclusion:
Students will come to consensus on a claim that the results either or support or does not support their hypothesis.

Strategies for Diverse Learners

Accommodating the needs of diverse learners can be accomplished by the use of manipulatives, modeling, and visual representation of data.

Extensions

Students can use a fan to simulate weathering as well as erosion taking place. Make observations.

Assessment Plan

Notes of weekly observations.
Group representation of results, i.e., pictures, graphs, conclusion, etc.

Rubrics

Science Writing: Argument to Support a Claim

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