Rock On!

An outside activity designed by Lewis Cozby and Linda Mc Linden

This lesson is designed for grades 1 - 6. Lesson developed by participants of a summer workshop at Grant-Kohrs Ranch National Historic Site.

Montana Science Standards:

Content Standard 1 – Students, through the inquiry process demonstrate the ability to design, conduct, evaluate and communicate results and reasonable conclusions of scientific investigations.

Content Standard 2 – Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Content Standard 4 – Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth's systems and other objects in space.

Subjects: Science, Language Arts

Goal: Students will understand that nature moves rocks from one place to another and some of the results of that movement. Discoveries include movement by water, by ice and/or by land.

Duration: 3 sessions. Depending on age and number, activity may take a full afternoon.

Description: Students will work in groups to perform and write about water action on rocks. Groups of 4 will have: two gatherers, a recorder, and a reporter. Rotate for water pourers.

Preparation/Materials: This will be an outside activity. Gather:

- buckets of different sizes and kinds of rocks and gravel. Could include igneous, sedimentary, and metamorphic rocks.
- water hose and source
- wide wooden trough, one for each group. (12 inch board with 2 x 4 sides, 8 feet long. See shop teacher.)
- boards to stack under the trough to create a varying slope
- large watering can
- spray bottle
- one timer per group

Discussion questions:

What happens to the rocks as they are moved?
Do different shaped rocks move differently?
Do different size rocks move differently?

Activities:

Day One: Demonstrate the following procedure. As you demonstrate, discuss the effect each has on the gravel pile. After each application of water students must note what they see happening.

- Dump a bucket of mixed gravel at the top of the sloped trough. (Observe what happens to the rocks as they are dumped)
- Use spray bottle to simulate a gentle rain. Spray on various spots of the gravel pile.
- Similarly, use watering can to simulate hard rain.
- Use hose with small stream to show river forming.
- Use more pressure to show flooding.
- If a group has extra time, they can conduct a mini-experiment using different slopes as a variable, or place boulders as an obstruction.

Students then move into their groups to perform the experiment for themselves. Distribute different size gravel to each group. Again instruct on the importance of taking notes during or after each application of water. Provide worksheet and clipboards for recording.

Day Two: Sharing data. Each group will report to the class the results of their experiment. Groups will compare and contrast each others results.

Day Three: Students write about the activity. Individually students will state the purpose, describe what they did and form a conclusion using all data collected.

Extensions: Could go to a road cut and observe natural occurrence. Faulting could be done on a different day. Use two boards that can be place side by side and be moved to simulate the effects of a fault line. Ice effects could be shown in winter months using a pile of snow on top of gravel. Observations could be made of movement on plowed snow piles.

Group Members _____

Gravel size _____

	Spray bottle	Watering Can	Hose -Trickle	Hose - Flood
After 1 minute				
After 2 minutes				
After 3 minutes				
After 4 minutes				
After 5 minutes				