Pictou County Forest School - Grade 4 Lesson Plans
Earth and Space Science: Rocks and Minerals

Activity: Mountain movers (suggested time 120 minutes: 60 minute hike / 60 minute activity)
Overall Curriculum Outcome: Learners will investigate how the Earth's surface changes over time.
Specific Curriculum connections:
Erosion

- How can the effects of weather be seen on the Earth's surface?
- How do rocks change over time?
- How does erosion affect soil?

Human impacts

- How are humans impacting the rock cycle?
- How can humans reduce their impact on the rock cycle?

Materials:

- Plastic totes and water jugs for both storage and pouring
- Sand, gravel, clay, loam, humus
- Found natural items (leaves, moss, sticks, stones)
- Clipboards, paper and pencil crayons

Intro/Activation:
Explain to the students that where we stand is in a region called the Appalachian Mountains. The Appalachian mountains are currently so low in elevation due to their old age but were once as high as the Himalayas (Mount Everest). Their rock is over 400 million years old and over time erosion has reduced their height to current elevations.

Ask students how a mountain range once as high as Mount Everest could be reduced to the size of, say, Fitzpatrick Mountain in Scotsburn?
EROSION = glaciers, wind, water (rain, rivers, freezing), sand, human induced (mining, flooding induced erosion).

Instructions/Activity:
Activity #1 Geology Walk
Take students on a hike around PCFS looking for signs of erosion (both prehistoric and current)
I need more time to talk to Scott regarding possible sites where erosion/fossils etc is obvious…
Discuss/sketch observations

Activity #2 Terraforming/Erosion Inquiry

Totes	Natural gradient
Provide each group a plastic tote. Each group is responsible for 'terraforming' their tote to look like the Earth's surface. It is beneficial for students to create a gradient from one side of the tote to the other so that	Find a suitable gradient for students to observe water running downhill. The experiment runs similar to the tote experiment, having kids add rocks, stones and organic materials to their water courses and observing the results.

they create a river effect. Students pour water from the top of their watershed and observe where the water goes. Add food colouring to water if needed to help students see the water in action. - Does the water run fast? Does it take lots of sediment with it? - What could be done to slow down the moving water and slow Ask students how adding rocks, sticks, moss, leaves etc to their totes would change the flow and colour of water? Retry the experiment with their added features.	

Reflection/further wonderings:
Ask students what happened to their rivers when they added obstacles to their water courses? How did it affect the course and speed of water movement? (You can make the comparison of trying to walk through the hallway at school during busy times and quiet times. Which is easier and faster?).

What types of human-induced erosion do we see in our lived environments? (flooding downriver of clear cuts; huge water pulses running off of giant parking lots; water running off of our roofs)

How can we mitigate erosion at home?

- Permaculture: “Where water runs, make it walk; where water walks, make it crawl; where water crawls, make it seep and sleep.”