

Lesson: **Rocks and Standing Rock**

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Grade Level: **Science, Grade 7**

(with connections to English and social studies)

Essential Question:

What are the social and environmental implications of the North Dakota Pipeline?

Project and Purpose:

After learning about rocks and the rock cycle, students learn about social justice activities taking place along the North Dakota Access Pipeline. Students engage in formulating arguments and developing counterarguments related to NoDAPL and the effect of human impact on the environment. The end product will be an anchor chart highlighting the rock cycle, types of rocks, and the Dakota Access Pipeline.

Standards and Objectives:

NYS Standards, Standard 4: The interior of the Earth is hot. Heat flow and movement of material within the Earth cause sections of Earth's crust to move. This may result in earthquakes, volcanic activity, and the creation of mount and oceanic basins. (2.2a)

Heat can be transferred through matter by the collisions of atoms and/or molecules (conduction) or through space (radiation). In a liquid or gas, currents will facilitate the transfer of heat (convection). (4.2b)

Culturally Relevant Standards: Student must develop a critical consciousness through which they challenge the status quo of the current social order.

Through class discussion and recalling information about the Rock Cycle and types of rocks, students will be able to explain the social and environmental implications of the North Dakota Access Pipeline.

Materials:

- FQR Graphic Organizer: www.cdn-educators.brainpop.com/wp-content/uploads/2012/05/BrainPOP_FQR.pdf
- [PPT Presentation](#)
- Chart paper
- Markers
- Leveled graphic organizers, Think-Pair- Write-Share, Venn Diagrams:
 - www.dapipelinefacts.com
 - www.youtube.com/watch?v=dODisUNNDg
 - www.nycstandswithstandingrock.wordpress.com/standingrocksyllabus
 - www.choices.edu/resources/twtn/twtn-dakota-access-pipeline.php
 - www.brainpop.com/science/earthsystem/rockcycle
 - www.brainpop.com/science/earthsystem/typesofrocks

Procedure:

1. **Do now:** Students spend first three minutes writing brief response to the following question: What is fracking, and why is it so controversial? (Recalling Information)
2. Teacher conducts a mini-lesson about three types of rocks (igneous, sedimentary, and metamorphic) and introduces students to the North Dakota Access Pipeline with a special focus on “Fracking” and how this disrupts the rock cycle in this region of the United States (along the Access Pipeline). Students will also be introduced to the concept of Environmental Racism.
3. Teacher conducts a think-aloud about the rock cycle and creates a Venn Diagram.
4. Teacher will model how to complete an inquiry based activity using the NYC Stands with Standing Rock and the article “Youth Activism and the Dakota Access Pipeline.” Teacher will conduct a think aloud based on the “Think/Pair/Write/Share” Accountable Talk protocol to demonstrate for students how to work collaboratively while utilizing metacognitive skills.
5. Students complete a Think/Pair/Write Share (leveled) graphic organizer.
6. Students work independently, in pairs, or in small groups to create anchor charts/posters for or against the Dakota Access Pipeline, highlighting the Rock Cycle, the three types of rocks the specific rocks that are located within the region of DAPL, and the evidence of Native American culture within the region. Students should consider questions from the lesson:
 - What is a rock that forms when existing rock is changed by heat and pressure beneath Earth’s surface called?
 - What is a rock that forms when sand, particles of rock, bit of soil, and remains of once-living things are cemented called?
 - How do geologists classify rocks?
 - Where do we find (igneous, sedimentary, and metamorphic) rocks?
 - In order for a metamorphic rock to become an igneous rock, what must happen?
 - Why do the natives and other protestors oppose the NoDAPL project?

Conclusion:

Students will be given an Exit Ticket related to the Rock Cycle/Types of Rocks; the question will be derived from a previously administered NY State 8th Grade Science exam: What is fracking, and why is it so controversial?
