



Do the Science

Instructional materials (text; kit) Worksheets (attached) for each student, warming tray for each group, foil for each group

Grade Level: 6-8

Lesson: Crayon Rock Cycle Simulation

<p>Big Idea: Landforms are shaped by processes that build up and processes that break down. The rock cycle is part of these processes. 6-8 ES2G&H</p>	
<p>Learning Target: The rock cycle describes the formation of igneous rock from magma or lava, sedimentary rock from compaction of eroded particles, and metamorphic rock by heating and pressure.</p>	<p>Common Misconceptions: Students may believe that change in landforms happens rapidly. Students may believe that all landforms are as they have always been.</p>
<p>Success Criteria: I can complete a circular flow chart of the crayon/rock cycle simulation that shows how one kind of rock can become another kind of rock.</p>	<p>Vocabulary: describe sedimentary rock erosion metamorphic rock igneous rock</p>
<p>Elicitation Activity*: Show the students a rock. Ask, “How do you think this rock formed?” Write student ideas on the board.</p>	<p>Talk structures/Discourse techniques: Think-pair-share Class discussion Teacher to students Small group discourse Class discussion Independent work-- Graphic representation</p>
<p>Topic introduction/lesson Activities: Introduction: Introduce the crayon/rock cycle activity (see the Rock Cycle Crayon Lab, pp. 3-5 of this lesson plan). Activities: Students carry out simulation as directed in the Rock Cycle Crayon Lab document. Closure (see p. 2): Review the statements generated during the elicitation activity. Eliminate the unlikely. Each student shows how one form of crayon/rock becomes another form of crayon/rock through completing a circular flow chart of the crayon/rock cycle (see p. 6 of this lesson plan).</p>	

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<p>Embedded Formative Assessment/s:</p> <p>Exit slip: Draw a circular flow chart that shows how one kind of rock can become another kind of rock.</p>	
<p>Adjustment Trigger <i>What level of student performance will necessitate an instructional adjustment?</i></p>	<p>80% correct crayon/rock cycle exit slip</p>
<p>Instructional Adjustment (if needed):</p> <p>Revisit the concepts presented through the crayon cycle and relate them directly to the rock cycle.</p>	
<p>Lesson Closure*:</p> <p>Exit slip showing crayon/rock cycle. Return to list on board. Eliminate some of the original ideas and choose the most likely ideas.</p>	

* Opportunity for formative assessment

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Name _____ Period _____ Date _____

Rock Cycle Crayon Lab

Purpose: To observe the rock cycle through a simulation using crayons.

Materials: 1 crayon per person, 1 pencil sharpener per person, aluminum foil, wax paper, hot water bath, board, cup

PART 1: WEATHERING

1. Obtain one piece of wax paper, one crayon, and one pencil sharpener per person. The crayons are igneous rock, your parent rock material. The pencil sharpener is your weathering agent. Shave your crayon into a small pile of “sediment” on your waxed paper.
 - Are all of your rock fragments the same size? Why or why not?
 - DESCRIBE and DRAW the crayon after weathering.
 - What are some of nature’s weathering forces?

PART 2: EROSION & DEPOSITION

2. Obtain one piece of aluminum foil for your table group. Now, erode (move) and deposit your weathered crayon onto a piece of aluminum foil in a neat pile. One by one, your partners will add their rock fragments to the sediment pile.

PART 3: COMPACTION & CEMENTATION

3. Carefully fold the loose layers of crayon shavings inside the aluminum foil so that the crayon is covered completely. Compact and cement the layers by placing them underneath a board and pressing firmly with your hands. Then, remove the board and *carefully* unwrap the aluminum foil.
4. Remove a small piece of the crayon and set it aside.
 - What kind of rock does the crayon represent?
 - DESCRIBE and DRAW the crayon after compaction and cementation.

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PART 4: METAMORPHISM

5. Reshape your aluminum foil to form a small boat with the rest of the crayon inside. Move to a hot water bath around the edge of the room. Float the foil packet in the hot water bath until you see the edges of the crayon start to melt.
6. Fold the foil boat back over the top of the hot rock. Apply intense pressure by placing a board on top of the foil packet and standing on top of the board until the crayon has cooled.
7. After the crayon has cooled, carefully unwrap the foil and remove the crayon. Break off a small part of the rock and set aside.
 - What kind of rock does the crayon now represent?

 - DESCRIBE and DRAW the crayon after intense heat and pressure.

PART 5: IGNEOUS ROCK FORMATION & VOLCANIC ACTIVITY

8. Put your rock from Part 4 on a new piece of foil. Fold the edges of the foil up so that it makes a lip around the edges so the crayon wax can't leak out. Carefully heat the foil over the hot plate until the crayon is melted. Don't let it smoke too much! Pour the melted wax into a cup to cool. Let the crayon cool for a few minutes.
 - What kind of rock does the cooling crayon represent?

ANALYSIS:

1. What was the difference between making a sedimentary rock and metamorphic rock?

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2. Fill out the table below using what you learned from the lab.

Rock Type	3 Characteristics	Formation	Drawing
Sedimentary			
Metamorphic			
Igneous			

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Name _____

