



## Rock to Cheese

Turn a rock into cheese in a few simple steps

### Overview:

Utilizing different props, students will determine the processes in which rocks are turned into cheese.

### Lesson Characteristics:

Use the table below for lesson planning purposes:

Grade	5th grade
Time Required	45 min.
Key Science Practices	Asking Questions and Defining Problems Developing and Using Models Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information
Key Concepts/Terms	Erosion; Hay; Sand; Soil; Cow; Milk; Cheese
Setting	Inside & Outside
Materials	Rock to Cheese Lesson Video A Camera

### Next Generation Science Standards:

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Developing and Using Models	PS3.D Energy in Chemical Processes and Everyday Life	Cause and Effect
Engaging in Argument from Evidence	5-LS1.C: Organization for Matter and Energy Flow in Organisms	Energy and Matter
	5-LS2.A: Interdependent Relationships in Ecosystems	Systems and System Models
	5-LS2.B: Cycles of Matter and Energy Transfer in Ecosystems	

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### Learning Objectives

Students will...

- ...use props to model how the interactions between matter and energy can create something we use in our daily lives.
  - ... describe how different processes occur, such as erosion and food chains.
  - ... model the movement of minerals through a food system.
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### Preparation:

- Students should prepare to go outside after the video is over
  - Students should either download or print the Rock to Cheese worksheet
  - Prior to this lesson students should have some understanding of the following: Food chains and erosion.
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### Background Information:

Everything we eat in our daily lives has touched dirt in some way before it arrived at our plate. The dirt and the food are connected, and we will trace this connection with simple props.

### Vocabulary:

Term	Definition
Cheese	A byproduct of curdled milk eaten by humans
Cow	A domesticated mammal raised on farms to produce milk, cheese and meat
Erosion	The process in which rock is broken down into smaller rocks or soil is taken from the land
Hay	Grasses cut before going to seed to feed to herbivores on a farm
Milk	A product produced by mammals to feed their young
Sand	Eroded rock low in nutrients that makes up most of the world's beaches and deserts
Soil	Combination of rocks, nutrients and microorganisms that are essential for plant growth

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### Procedure:

Follow the steps in the table below to conduct the activity.

**Sentences in bold are suggestions for what an educator might say to students.**

*Items in italics are possible student answers to questions.*

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Step	Action
	5E's: Engage                      Learning Cycle: Invitation
1	Prior to watching the video poll the students with: <b>What are some things you have eaten in the last 24 hours that contain calcium?</b> <i>Milk, cheese, broccoli.</i> <b>How does the calcium in these products get there?</b> <i>It's added in by factories. Decomposers put it into the soil. It is taken from the animals' bones</i>

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2	<b>Now let's watch the Rock to Cheese video up to the 1 minute mark. Fill out the <u>Hypothesis</u> section of your worksheet.</b>
5 E's: Explore          Learning Cycle: Exploration	
3	<b>Continue watching the video and make note of the different earth processes the speaker is mentioning.</b>
4	<b>After watching the video fill out the <u>Actual</u> section of the worksheet.</b>
5 E's: Explain          Learning Cycle: Concept Invention	
5	Review the worksheet with the students and assist with correcting any misconceptions.
5 E's: Elaborate          Learning Cycle: Application	
6	<b>What would happen if we replaced all soil with sand? <i>Plants would not be able to grow because there aren't any nutrients.</i></b> <b>Why would a farmer care if the soil is healthy?</b>
5 E's: Evaluate          Learning Cycle: Reflection	
	<b>Head outside and photograph some of the earth processes mentioned in the video.</b>