

# **EARTH SCIENCE** Lesson Plan

## Quarter 1, Week 1, Day 1



### **Outcomes for Today**

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Standards focus: Earth Sciences 7.c *Students know that the movement of matter between reservoirs is driven by Earth's internal and external sources of energy*

#### **PREPARE**

##### **1. Background knowledge necessary for today's reading.**

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Earth's surface is constantly being shaped.  
 What are the processes that affect/change the Earth's surface?  
 How are they interrelated?

##### **2. Vocabulary Word Wall.**

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Introduce 3-5 important, useful words from today's reading

**mechanical weathering frost wedging exfoliation temperature pressure**

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say and define the word quickly and add to the word wall

#### **READ**

##### **3. Review the vocabulary and concepts previously covered in this chapter.**

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(Not applicable on day 1)

##### **4. Read directions for investigation/activity.**

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Discovery Lab page 153

##### **5. Read text.**

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Chapter 7.1 pp. 153-155

## RESPOND

### 6. Fix the facts. Clarify what's important.

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Discuss the reading and add 3-5 facts/events to the billboard

- Discuss the text; clarify the most important facts, concepts, ideas, and vocabulary
- Decide on the 3-5 most important concepts and post these on the billboard

Students might mention:

- Mechanical and chemical weathering are two processes that wear down rocks and minerals.
- The freezing and melting of water produces pressure that causes rocks to split.
- Roots of trees and plants also exert pressure on rocks.

### 7. Post information on the billboard. Add new information to ongoing class projects on the wall.

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- Graphic organizers can be used to
- New concept information can be added to the billboard.
- An answer can be added to the billboard from the KWL chart
- New information can be added to ongoing charts and investigations

## EXPLORE

### 8. Explore today's investigation with inquiry activities.

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### 9. Explore today's simulation with inquiry activities.

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### 10. Collect data and post.

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**One possible activity:** Discovery Lab p. 153

**Description of the Activity:** Compare the rate at which cube sugar and granulated sugar dissolve in water.

**Procedure:** Place sugar in two beakers and stir. Record the time it takes to dissolve.

**Discussion:** Discuss the difference in the surface area and the interface with the water.

**Key question**

- Why did one dissolve faster than the other?

## EXTEND

### 11. Prompt every student to write a short product tied to today's reading.

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### 12. Close with a short summary.

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Extend the reading to the students' lives or the world.

Character Education at the Markkula Center for Applied Ethics

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# **EARTH SCIENCE** Lesson Plan

## Quarter 1, Week 1, Day 2



### Outcomes for Today

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Standards focus: Earth Science 7.c

#### **PREPARE**

##### **1.** Background knowledge necessary for today's reading.

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Chemical reactions between rocks and water result in the formation of new minerals and the release of dissolved substances.

Certain conditions can accelerate or slow the weathering process.

##### **2.** Vocabulary Word Wall.

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Introduce 3-5 important, useful words from today's reading

**chemical weathering**

**hydrolysis**

**oxidation**

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say and define the word quickly and add to the word wall

#### **READ**

##### **3.** Review the vocabulary and concepts previously covered in this chapter.

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##### **4.** Read directions for investigation/activity.

---

##### **5.** Read text.

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Ch.7.1 pp. 155-161

## RESPOND

### 6. Fix the facts. Clarify what's important.

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Discuss the reading and add 3-5 facts/events to the billboard

- Discuss the text; clarify the most important facts, concepts, ideas, and vocabulary
- Decide on the 3-5 most important concepts and post these on the billboard

Students might mention:

- Water, oxygen, carbon dioxide, and acid chemically change rocks and minerals.
- An area's climate has a major effect on its rate of chemical weathering.
- The type and composition of rocks affect its resistance to weathering.
- Temperature can influence the rate at which chemical reactions occur.
- Water can dissolve many kinds of minerals and rocks.
- Carbon dioxide and water can combine to form carbonic acid.

### 7. Post information on the billboard. Add new information to ongoing class projects on the wall.

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- New concept information can be added to the billboard.
- An answer can be added to the billboard from the KWL chart
- New information can be added to ongoing charts and investigations

## EXPLORE

### 8. Explore today's investigation with inquiry activities.

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### 9. Explore today's simulation with inquiry activities.

---

**10.** Collect data and post.

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**One possible activity:** Steel Wool and Water (chemical weathering)

**Description of the Activity**

**Procedure:** Place a piece of steel wool in each of three shallow dishes, using gloves to avoid splinters. Pour equal amounts of water over two of the pieces of steel wool. Leave the third piece dry. Sprinkle one of the wet pieces with plenty of salt. Observe and compare pieces over several days.

**Discussion:** When iron get wet, water acts as an agent for oxidation. Oxygen in the water combines with the iron in the steel wool to form an iron oxide, or rust. Rust is a weaker material than the original metal and erodes quickly. When salt is added to the water, it speeds up the oxidation of iron.

**Key questions:**

- What happened to each piece?
- Which piece changed the most?
- Why did the steel wool change?
- What does this have to do with weathering?

[Http://www.consrv.ca.gov/CGS/information/kids-geozone/do\\_rocks\\_last\\_forever.htm](http://www.consrv.ca.gov/CGS/information/kids-geozone/do_rocks_last_forever.htm)

**EXTEND**

**11.** Prompt every student to write a short product tied to today's reading.

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**12.** Close with a short summary.

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Extend the reading to the students' lives or the world.

# EARTH SCIENCE Lesson Plan

## Quarter 1, Week 1, Day 3



### Outcomes for Today

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Standards focus: Earth Science 9.b *Students know the principal hazards in different California regions and the geological basis for those hazards.*

#### PREPARE

##### 1. Background knowledge necessary for today's reading.

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Erosion is a destructive process that wears down the Earth's surface.  
 Deposition is a constructive process that builds up Earth's surface.  
 Water has more power to move weathered materials than wind does.

##### 2. Vocabulary Word Wall.

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Introduce 5 important, useful words from today's reading

**Deposition      erosion      gravity      rill erosion      gully erosion**

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say and define the word quickly and add to the word wall

#### READ

##### 3. Review the vocabulary and concepts previously covered in this chapter.

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##### 4. Read directions for investigation/activity.

---

##### 5. Read text.

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Ch. 7.2 pp. 163-165

## RESPOND

### **6.** Fix the facts. Clarify what's important.

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Discuss the reading and add 3-5 facts/events to the billboard

- Discuss the text; clarify the most important facts, concepts, ideas, and vocabulary
- Decide on the 3-5 most important concepts and post these on the billboard

Students might mention:

- Erosion is a continual process.
- In general, water has more power to move weathered materials than wind.
- Deltas are created as water carrying sediment and weathered materials flows into oceans.

### **7.** Post information on the billboard. Add new information to ongoing class projects on the wall.

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- New concept information can be added to the billboard.
- An answer can be added to the billboard from the KWL chart
- New information can be added to ongoing charts and investigations

## EXPLORE

8. Explore today's investigation with inquiry activities.

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9. Explore today's simulation with inquiry activities.

---

10. Collect data and post.

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**One possible activity:** Demonstrating Erosion in Action

**Description of the Activity:** Water is sprinkled into each of five trays containing different component and soil.

**Procedure:** Students measure and chart the amount of "run off" and the mass of solid material that eroded.

**Discussion:** Soil erosion is an on-going natural process, but its effects can be minimized

**Key questions:**

- Which soil condition lost the most soil?
- Which soil condition had the greatest amount of run off?
- Which land management methods were the most effective in controlling erosion?

Source: <http://www.scienceteacher.org/k12resources/lessons/lessonA30.htm>

## EXTEND

11. Prompt every student to write a short product tied to today's reading.

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12. Close with a short summary.

---

Extend the reading to the students' lives or the world.



# **EARTH SCIENCE** Lesson Plan

## Quarter 1, Week 1, Day 4



### **Outcomes for Today**

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Standards focus: Earth Science 9.b

#### **PREPARE**

**1.** Background knowledge necessary for today's reading.

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**2.** Vocabulary Word Wall.

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Introduce 5 important, useful words from today's reading

**Delta      barrier islands      glacial erosion      wind erosion**

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say and define the word quickly and add to the word wall

#### **READ**

**3.** Review the vocabulary and concepts previously covered in this chapter.

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**4.** Read directions for investigation/activity.

---

**5.** Read text.

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Ch. 7.2 pp. 165-166

## RESPOND

### 6. Fix the facts. Clarify what's important.

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Discuss the reading and add 3-5 facts/events to the billboard

- Discuss the text; clarify the most important facts, concepts, ideas, and vocabulary
- Decide on the 3-5 most important concepts and post these on the billboard

Students might mention:

- Glaciers because of their density have the power to effect the formation of landscapes.
- Wind is an important agent of erosion in areas with little precipitation and high temperatures.
- Plants, animals and humans also are agents of erosion to a much lesser degree than water, wind, and glaciers.

### 7. Post information on the billboard. Add new information to ongoing class projects on the wall.

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- New concept information can be added to the billboard.
- An answer can be added to the billboard from the KWL chart
- New information can be added to ongoing charts and investigations

## EXPLORE

### 8. Explore today's investigation with inquiry activities.

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### 9. Explore today's simulation with inquiry activities.

---

### 10. Collect data and post.

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#### **One possible activity: Creating Sand Dunes**

##### **Description of the Activity**

**Procedure** Place 1.5 liters of sand into each of two pans labeled A and B. In pan B arrange stones and clumps of grass in different areas throughout the sand. Using a hand-held electric hair dryer on low speed, hold it at a 45 degree angle, 10cm from one end of pan A for 1 minute. Record all observations. Repeat with pan B. Sketch a diagram of the appearance of the sand in each pan.

Level the sand in pans A and B. Repeat the procedure above, this time on high speed for 3 minutes. Sketch the results.

**Discussion:** Inquire what students know about dunes and what factors effect their creation and movement.

**Key questions:**

- How did the rocks and clumps of grass affect the patterns made by the blowing sand?
- How might this be of interest for soil conservation?

Source:[http://www.eduref.org/Virtual/Lessons/Science/Earth\\_Science/EAR0007.html](http://www.eduref.org/Virtual/Lessons/Science/Earth_Science/EAR0007.html)

**EXTEND****11.** Prompt every student to write a short product tied to today's reading.

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Is erosion purely a destructive force, or does it have constructive aspects as well? Explain and give examples.

**12.** Close with a short summary.

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Extend the reading to the students' lives or the world.

# **EARTH SCIENCE** Lesson Plan

## Quarter 1, Week 1, Day 5



### **Outcomes for Today**

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Standards focus

#### **PREPARE**

##### **1. Background knowledge necessary for today's reading.**

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Soil is an important natural resource. It begins with the weathering of Earth materials. Factors that influence soil formation are time, climate, topography, and the types of organisms present.

##### **2. Vocabulary Word Wall.**

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Introduce 5 important, useful words from today's reading

**Soil      humus      parent rock      residual soil      transported soil**

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say and define the word quickly and add to the word wall

#### **READ**

##### **3. Review the vocabulary and concepts previously covered in this chapter.**

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##### **4. Read directions for investigation/activity.**

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##### **5. Read text.**

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Ch. 7.3 pp. 167-170

## RESPOND

### 6. Fix the facts. Clarify what's important.

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Discuss the reading and add 3-5 facts/events to the billboard

- Discuss the text; clarify the most important facts, concepts, ideas, and vocabulary
- Decide on the 3-5 most important concepts and post these on the billboard

Students might mention:

- Soil consists of broken rock particles and decaying organic matter.
- Soil forms in layers.
- There are three major soil layers or horizons.
- The topography of an area affects the thickness of the soil.

### 7. Post information on the billboard. Add new information to ongoing class projects on the wall.

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- New concept information can be added to the billboard.
- An answer can be added to the billboard from the KWL chart
- New information can be added to ongoing charts and investigations

## EXPLORE

8. Explore today's investigation with inquiry activities.

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9. Explore today's simulation with inquiry activities.

---

10. Collect data and post.

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**One possible activity:** What's in Soil?

**Description of the Activity:** Students examine a sample of soil to determine what it contains.

**Procedure:** Students work in pairs with a small plastic bag of soil (brought from home or provided by the teacher). The soil is spread onto a newspaper. Using a hand lens, students write down what they see and feel.

**Discussion:** All soils are composed of four major components: mineral matter, organic matter, water, and air, however the proportions will vary.

**Key questions:**

- What are the components of soil?
- Which are the most variable?
- Why do worms come to the surface after a rain?

Source: <http://extension.usu.edu/aitc/teachers/pdf>

## EXTEND

11. Prompt every student to write a short product tied to today's reading.

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12. Close with a short summary.

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Extend the reading to the students' lives or the world