

# **EARTH SCIENCE** Lesson Plan

## Quarter 2, Week 8, Day 1



### **Outcomes for Today**

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Standard Focus: Earth Sciences 1.c “students know the evidence from geological studies of Earth and other planets suggests early Earth was very different from Earth today”

### **PREPARE**

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

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For centuries, men have traveled and explored the seas going back to 4000 B.C. when the ancient Egyptians were the first to build seafaring ships. Later, the Phoenicians and the ancient Greeks had a fairly good knowledge of the Mediterranean Sea and beyond. Between the ninth and twelfth centuries Vikings explored parts of North America, Greenland, and Iceland. Columbus re-discovered America in 1492 and European countries began exploring and expanding into the new world.

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

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Introduce 3-5 important words from today’s reading

**oceanography    Challenger expedition    sonar    side-scan sonar**

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, 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. 15.1, pp. 385-386

## RESPOND

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

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

Students might mention:

- The modern study of oceanography began in the late 1800's with the British Challenger expedition.
- The Challenger expedition investigated ocean currents, water temperature and chemical composition, seafloor sediments and topography.
- Sonar was used for the first time in the 1920's to map seafloor features.

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

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## 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 – Measuring Earth's Land and Water (text p. 385)

**Procedure:** Students use globes to quantify the amount of water on Earth's surface.

**Discussion:** Discuss and compare the landmass areas to the areas covered by water.

**Key question:** Why is Earth referred to as "the blue planet"?

## 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 to the world.

# **EARTH SCIENCE** Lesson Plan

Quarter 2, Week 8, Day 2



## **Outcomes for Today**

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Standard Focus: Earth Sciences 1.c

### **PREPARE**

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

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Scientists have found rocks formed from sediments deposited in water that are nearly 4.6 billion years old, supporting the idea that oceans have existed almost since the beginning of geologic history. Further support for this theory is the existence of ancient lava flows that have glossy crusts. These crusts only form when molten lava cools quickly under water.

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

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Introduce 3-5 important words from today's reading

**comet**

**meteor**

**volcanism**

Show, say, explain, expand, explode or buzz about the word briefly  
Show, say, 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. 15.1, pp. 387-388

## RESPOND

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

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

Students might mention:

- Earth's oceans possibly formed as long as 4 billion years ago.
- Scientists theorize the Earth's water could have originated from two possible sources.
- Volcanism and water from impacting comets are possible sources.

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

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## 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:** Article – A Taste for Comet Water

**Procedure:** Class reads and discusses the article.

**Discussion:** Discuss the controversy about “heavy water” from comets.

**Key question:** How does this article change perceptions about comet impacts part in the formation of the oceans?

**Source:** [http://science.nasa.gov/headlines/y2001/ast18may\\_1.htm](http://science.nasa.gov/headlines/y2001/ast18may_1.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 to the world.

# **EARTH SCIENCE** Lesson Plan

Quarter 2, Week 8, Day 3



## **Outcomes for Today**

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### **PREPARE**

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

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By looking at a world map it may be noted that the oceans are one interconnected body of water that completely surrounds Earth's land masses. For geographic and reasons several names are used to identify different areas of the ocean. Most landmasses are in the northern hemisphere where the oceans cover approximately 61% of the Earth's surface. In the southern hemisphere the oceans account for about 81% of the Earth's area.

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

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Introduce 3-5 important words from today's reading

##### **sea level**

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, 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. 15.1, pp.

## RESPOND

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

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

Students might mention:

- The oceans contain 97% of the Earth's water.
- All the oceans are really one, interconnected body of water.
- Seas are smaller than oceans and partially or mostly landlocked.

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

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## 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:** Waters of the Earth

**Procedure:** Students make a visual display showing the distribution of water on Earth

**Discussion:** Discuss the forms of water found on Earth.

**Source:** <http://www.sea.edu/academics/k12.asp?plan=watersoftheearth>

## 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 to the world.

# **EARTH SCIENCE** Lesson Plan

## Quarter 2, Week 8, Day 4



### **Outcomes for Today**

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Standard Focus: Earth Sciences 5.d “students know properties of ocean water, such as temperature and salinity, can be used to explain the layered structure of the oceans, the generation of horizontal and vertical ocean currents, and the geographic distribution of marine organisms”

#### **PREPARE**

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

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The density of water depends on its temperature and salinity. Fresh water reaches its maximum density of 1 gram per cubic centimeter at 4 degrees Celsius. At higher temperatures thermal expansion causes a decrease in freshwater density. At lower temperatures the cold water has a molecular structure similar to ice. Dissolved salt ions increase the density of water.

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

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Introduce 3-5 important words from today’s reading

#### **salinity**

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, 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. 15.2, pp. 392-394

## RESPOND

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

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

Students might mention:

- Sea water contains 96.5% water and 3.5% dissolved salts.
- The salinity of oceans varies from place to place.
- Scientists believe the salinity of the Earth's oceans has remained nearly the same over geologic time.

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

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## 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:** Count Marsili and the Mediterranean Current

**Procedure:** Students discover how salinity affects the density of water.

**Discussion:** Discuss the problem Marsili was investigating.

**Key question:** What was the current flow you observed?

**Source:** <http://www.sea.edu/academics/k12.asp?plan=countmarsili>

## 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 to the world.



# **EARTH SCIENCE** Lesson Plan

Quarter 2, Week 8, Day 5



## **Outcomes for Today**

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### **PREPARE**

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

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The density of seawater ranges from 1.02 grams per cubic centimeter to 1.03 grams per cubic centimeter depending on salinity and temperature. Dissolved salts decrease the freezing point of seawater to about -2 degrees Celsius. The densest seawater has a temperature of -2 degrees Celsius and high salinity.

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

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Introduce 3-5 important words from today's reading

##### **temperature profile**

##### **thermocline**

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, 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.15.2, pp. 395-396

## RESPOND

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

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

Students might mention:

- Saltwater is denser than freshwater.
- Cold water is denser than warm water.
- Generally, light penetrates only the upper 100 meters of seawater.

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

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## 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:** Stacking Water

**Procedure:** Students investigate the salinity of different water samples.

**Discussion:** Discuss how density differs by salinity and temperature

**Key question:** How did the different samples compare?

**Source:**

<http://www.sea.edu/academics/k12/asp?plan=stackingwater>

## 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 to the world.