

**CBL Biology: Life Science Option**  
**BSCS Green Version 10<sup>th</sup> edition *Biology An Ecological Approach***  
**Lesson Plan for Week 3, Day 1**  
Standards Focus: **8e**

## **PREPARE**

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

This lesson is about a trip back in time (from a biologist's viewpoint) through geologic history. The lesson, on the history of the earth, takes a look at the various life forms from eras of the past. This would be a good time to introduce or reintroduce the concept of a timeline. A timeline will be covered in a future lesson in detail, but it is often a concept that is misunderstood. Students need to understand that geologic time is a long time.

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

Introduce five important, useful words from today's reading.

**plankton            spore            strata            invertebrate            vertebrate**

- 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.**

Start at the beginning and review the concepts and vocabulary covered so far.

- Mention the setting and main ideas.
- Point to the concept chart as you quickly review it.

Ecologists study the relationships between living things and their environment. Paleocologists study these same relationships among organisms that lived on earth during bygone eras.

Scientists have come to understand much of the nature of previous life on earth through fossil records.

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

### **5. Read Text Chapter 21, Patterns in the Biosphere: Ecosystems of the Past, Text Section 21.6 – 21.9 , pp. 603-607.**

- Shared Reading RRP: Read, React, Predict every 2-3 pages  
 Tape  Partner  Choral  Silent  Round Robin Reading

Setting	Characters	Pages
Cambrian era	early sea life and marine plants	604
Paleozoic era	clams, starfish, first air-breathing animals	
Carboniferous era	large land plants and giant dragonflies	606
Mesozoic era	dinosaurs, mammals, birds	607

## RESPOND

### 6. Fix the facts. Clarify what is important.

Discuss the reading and add 3-5 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:

Life was first found in the waters of the Cambrian era.

Next, land animals appeared during the Paleozoic era.

There were these huge fern trees and giant dragonflies during the Carboniferous time.

Dinosaurs were all over the earth (land, sea, and the air) during the Jurassic times.

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

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

## EXPLORE

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

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

### 10. Collect data and post.

One possible activity:

## Fun and Learning with Clay

In this activity students will create the representative environments and animals of the various geologic eras of the past.

### Procedure

Divide the class into small groups of at least three, but no more than five, individuals per group. Randomly assign a geologic era to each group.

### Activity

Using modeling clay, play dough or other easily obtainable materials, have each group of students design and create a diorama representing their era.

Here are two links for information. The second one addresses details and provides ideas for dinosaur dioramas:

<http://www.lessonplanspage.com/LAScienceWhatIfDinosaursReturned13.htm>

<http://www.sciencenetlinks.com/lessons.cfm?BenchmarkID=5&DocID=358>

### Discussion

Follow up with a discussion on the movie *Jurassic Park*.

Other possible activities for a  class  group or  individual

Bookmark  Open Mind Portrait  g6 Graphic Organizer

g7 Main Idea Graphic Organizer  c1-12 Cubing  Postcard  Prop

Poster  Ad  Map  Retelling  Reader's Theatre  Cartoon  Rap

### Key Questions

Mix and Match

- |                 |                      |
|-----------------|----------------------|
| A Cambrian      | ___ dinosaurs        |
| B Devonian      | ___ first mammals    |
| C Jurassic      | ___ large forests    |
| D Carboniferous | ___ dinosaurs        |
| E Cretaceous    | ___ all aquatic life |

Where do you think the name carboniferous came from?

How did the lungfish get its name?

Remember to ask  literal  structural  idea  craft  author  literature  life  
 evaluate and  inference questions every day.

**Key Paragraph**

There is no evidence of terrestrial life during the Cambrian period, starting about 543 million years ago, but marine ecosystems were well developed. There were shallow- and deep-water organisms: floating, swimming, and bottom-dwelling types. The chief marine producers then, as now, were probably microscopic plankton species.

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

Suppose you could choose one of the ancient eras to visit. Which one would you choose and why?

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

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

**CBL Biology: Life Science Option**  
**BSCS Green Version 10<sup>th</sup> edition *Biology An Ecological Approach***  
**Lesson Plan for Week 3, Day 2**  
 Standards Focus: **8e**

## **PREPARE**

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

This lesson covers two major related concepts. The age of mammals, also known as the Cenozoic era, is addressed while the student activity introduces students to a relatively simple process for understanding geologic time.

Many students have probably seen pictures of the LaBrea Tar Pits along with the animals that have become mired and preserved in the sticky substance found there. Students are generally interested in such creatures as the saber-toothed cats and mastodons. Build upon this interest as you introduce this lesson.

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

Introduce five important, useful words from today's reading.

**mammal                  herbivore                  evolution                  ecosystem                  colonize**

- 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.**

Start at the beginning and review the concepts and vocabulary covered so far.

- Mention the setting and main ideas.
- Point to the concept chart as you quickly review it.

Scientists have created a history of life on earth by studying fossils.  
 The movement of the continents on the earth accounts for the fact that similar organisms have been found living on completely different continents.  
 Plate tectonics is the study of the moving continents.  
 Early paleoecosystems were found during different geologic eras.  
 The Cambrian era contained early aquatic organisms.  
 The Devonian era produced the first land plants and animals.

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

**5. Read Text Chapter 21, Patterns in the Biosphere: Ecosystems of the Past, Text Section 21.10 and Investigation 21.1, pp. 607-608 and 617-619.**

- Shared Reading RRP: Read, React, Predict every 2-3 pages  
 Tape  Partner  Choral  Silent  Round Robin Reading

Setting	Characters	Pages
LaBrea Tar Pits	saber-toothed cat and dire wolves	607
North America	bison and mammoths	608

## RESPOND

**6. Fix the facts. Clarify what is important.**

Discuss the reading and add 3-5 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:

The Cenozoic era was also known as the age of mammals.

The dinosaurs were killed off but lizards, turtles, birds, insects, and mammals survived.

Many animals, large and small, became trapped and died in the LaBrea Tar Pits near Los Angeles.

The first humans to arrive in North America were probably following large mammals to hunt.

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

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

## EXPLORE

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

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

## 10. Collect data and post.

### One possible activity:

#### Stuck in the Tar

There have been several references to the LaBrea Tar Pits as a “window” to the past. Begin with some virtual tours of the location by accessing these web sites:

<http://www.wcities.com/en/record/,48773/44/record.html>

<http://www.world66.com/northamerica/unitedstates/california/losangeles/museums/thepagemuseumatthelabreatar pits>

[http://www.paleoportal.org/index.php?globalnav=flora\\_fauna&sectionnav=assemblage&submission\\_id=1438](http://www.paleoportal.org/index.php?globalnav=flora_fauna&sectionnav=assemblage&submission_id=1438)

#### Discussion

After students have completed researching through these sites, have them record some sketches in their notebooks.

#### Extended Work

Refer to **Investigation 21.1** for more activities related to his.

Other possible activities for a  class  group or  individual

Bookmark  Open Mind Portrait  g6 Graphic Organizer

g7 Main Idea Graphic Organizer  c1-12 Cubing  Postcard  Prop

Poster  Ad  Map  Retelling  Reader's Theatre  Cartoon  Rap

#### Key Questions

Draw a food web based on a sampling of plants and animals found in the LaBrea Tar Pits.

#### Mix and Match

Era

A. Jurassic

B. Devonian

C. Carboniferous

D. Cenozoic

Animal(s)

\_\_\_ large dragonflies

\_\_\_ dinosaurs

\_\_\_ saber-toothed cat

\_\_\_ aquatic sea life

Remember to ask  literal  structural  idea  craft  author  literature  life  evaluate and  inference questions every day.

**Key Paragraph**

The Cenozoic era is often called the age of mammals because mammals have become so widespread during the last 65 million years. Though the first small, rat-like mammals lived at the same time as the dinosaurs, larger mammals did not evolve until the dinosaurs died out. Whatever killed the dinosaurs spared many lizards, turtles, amphibians, birds, insects, and ancestral mammals.

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

For the sake of argument, let us say that a batch of traveling humans fell into the LaBrea Tar Pits. Let's take it one step further. What would a group of paleontologists have to say when they discovered the remains 100 years from now? Prompt students to write in the third person on this subject.

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

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

**CBL Biology: Life Science Option**  
**BSCS Green Version 10<sup>th</sup> edition *Biology An Ecological Approach***  
**Lesson Plan for Week 3, Day 3**  
Standards Focus: **8e**

## **PREPARE**

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

This lesson delves into the emergence of humans on earth. It is important not to get caught up with discussions on creationism, intelligent design, evolution, or other religious “bird walks” or debates with students. It is important to remember that the content standards are the curriculum and it is your job as the teacher to teach to these standards. Stick to the fossil evidence. Remember that this is not a philosophy class. Ask students leading questions such as “Why do you suppose monkeys and apes have their eyes facing forward in their skulls?”

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

Introduce five important, useful words from today's reading.

**arboreal          primate          omnivore          hominid          bipedal**

- 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.**

Start at the beginning and review the concepts and vocabulary covered so far.

- Mention the setting and main ideas.
- Point to the concept chart as you quickly review it.

The history of living things on earth has been reconstructed by scientists by the study of the fossil record and sophisticated dating techniques such as potassium 40 and carbon 14.

Additional clues have been recorded as a result of collaboration between various disciplines of science including plate tectonics and paleoecology.

Previous ecosystems on earth that were thriving many years ago are classified as paleoecosystems.

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

**5. Read Text Chapter 21, Patterns in the Biosphere: Ecosystems of the Past, Text Section 21.11 – 21.12, pp. 609-610.**

- Shared Reading RRP: Read, React, Predict every 2-3 pages  
 Tape  Partner  Choral  Silent  Round Robin Reading

Setting	Characters	Pages
various arboreal habitats Africa	bush baby, tarsier, gibbon, monkey, gorilla	609

## RESPOND

**6. Fix the facts. Clarify what is important.**

Discuss the reading and add 3-5 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:

Humans, monkeys, apes, lemurs, and tarsiers are all primates.

Primates live mostly in trees and have strong sensitive hands.

Hominids, including humans, are the walking upright primates.

Primate eyes focus forward so they can tell depth of field.

*Homo habilis* was known as “handy man” because he made use of tools.

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

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

## EXPLORE

**8. Explore today’s investigation with inquiry activities.**

**9. Explore today’s simulation with inquiry activities.**

**10. Collect data and post.**

## One possible activity:

### Human Evolution

#### Description of Activity

This website contains numerous links to a wide variety of human evolution activities and related information. Depending on your technology resources, this could be utilized to help students develop a further understanding of human evolution.

<http://www.learner.org/channel/courses/biology/units/humev/index....>

#### Procedure

Assist students in researching the development of man from the primitive apelike Lucy to modern man.

#### Activity

Using post-it notes, direct students to make a series of drawings depicting the change from apes to humans. If this process is done correctly, students should be able to flip through the post-it notes (like a deck of cards) so that their drawings appear to come to life. In a way, the changes take place before their very eyes. This is one of those activities where it might be best to allow students to experiment first such as drawing a bouncing ball.

#### Discussion

Follow up with a review on the timeline in terms of millions of years.

Other possible activities for a  class  group or  individual

Bookmark  Open Mind Portrait  g6 Graphic Organizer

g7 Main Idea Graphic Organizer  c1-12 Cubing  Postcard  Prop

Poster  Ad  Map  Retelling  Reader's Theatre  Cartoon  Rap

#### Key Questions

Using illustrations, list four characteristics common to all primates.

Of what advantage to tree-dwelling primates is the placement of the eyes in the skull?

Why do primates generally only have one baby?

What is an anthropologist?

Describe and draw a typical hominid.

Where did the first hominids appear on earth?

Remember to ask  literal  structural  idea  craft  author  literature  life  
 evaluate and  inference questions every day.

**Key Paragraph**

The first humans on the American continent probably migrated here from Asia about 12,000 years ago - but the human species did not arise in Asia. Early Asians probably came from Africa, through the Mideast. Fossil evidence and early tool sites suggest that hominids, primarily primates that walked upright, developed in Africa.

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

Assist and encourage students to write a rap about primates. They might want to begin with the line, "We are primates..."

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

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

**CBL Biology: Life Science Option**  
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**Lesson Plan for Week 3, Day 4**  
 Standards Focus: **8e**

## **PREPARE**

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

It is in this lesson where the emergence of man (humans as we know them) is introduced. To build interest for this subject, engage students in a discussion on cavemen. List some of the common perceptions about cavemen. It is important at this time to review timelines with students. For example, Neanderthals appeared about 40 thousand years ago. Compare this time with the age of dinosaurs. Drawing a timeline with proportional distance-to-years scale will help. Use Figure 21.26 on page 615 as an example. This should help dispel the "caveman living with the dinosaurs" myth.

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

Introduce five important, useful words from today's reading.

**Neanderthals                  geneticist                  speech                  tool                  anthropologist**

- 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.**

Start at the beginning and review the concepts and vocabulary covered so far.

- Mention the setting and main ideas.
- Point to the concept chart as you quickly review it.

The history of life on earth has been recorded in vast numbers of fossils.

Scientists are constantly discovering new ways in which to reconstruct and understand the past.

The ecosystems of the past (paleoecosystems) were largely different from those of today.

During the time of life on earth, the continents were slowly moving apart.

Natural selection is the process in which those organisms most adapted to survival pass on their characteristics (genes) to the next generation.

Ancestors of present day humans include various primates.

Primates originally lived in forests and generally gave birth to only one offspring.

Primates generally teach their young many important survival behaviors.

#### 4. Read directions for investigation.

#### 5. Read Text Chapter 21, Patterns in the Biosphere: Ecosystems of the Past, Text Section 21.13, pp. 610-616 and Investigation 21.2 pp. 620-623.

- Shared Reading RRP: Read, React, Predict every 2-3 pages  
 Tape  Partner  Choral  Silent  Round Robin Reading

Setting	Characters	Pages
Africa	<i>Homo erectus</i>	610
Europe-S.W. Asia	Neanderthals	611
All over the earth except Antarctica	<i>Homo sapiens</i>	614

## RESPOND

#### 6. Fix the facts. Clarify what is important.

Discuss the reading and add 3-5 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:

*Homo erectus* was a primitive ape-human type of organism that lived a million years ago.

This group of pre-humans made use of fire.

*Homo erectus* was a pretty strong guy. Scientists can tell by the shape of their fossil bones.

Neanderthals were the next group of human-like ancestors to humans to appear on earth.

Scientists also use DNA to study humans.

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

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

## EXPLORE

8. Explore today's investigation with inquiry activities.
9. Explore today's simulation with inquiry activities.
10. Collect data and post.

One possible activity:

### Interpretation from the Findings

There are two parts to this activity. One is the activity outlined in Investigation 21.2 in the text (pp. 620-23) and the other is outlined in Supplemental Student Investigation 21.1 at the end of this lesson.

### Procedure

Follow the details outlined in both investigations. Note: Depending upon time, you may choose to omit one activity. Both activities take a minimum of two periods.

Other possible activities for a  class  group or  individual

- Bookmark  Open Mind Portrait  g6 Graphic Organizer  
 g7 Main Idea Graphic Organizer  c1-12 Cubing  Postcard  Prop  
 Poster  Ad  Map  Retelling  Reader's Theatre  Cartoon  Rap

### Key Questions

How was *Homo erectus* different from *Homo habilis*?

Sketch some of the first tools made by *Homo erectus*.

What have been some of the secrets that scientists have discovered by studying the fossil bones of early man?

What were some of the characteristics and behaviors of the Neanderthals?

How can genetics help scientists understand the development of the human race?

Remember to ask  literal  structural  idea  craft  author  literature  life  
 evaluate and  inference questions every day.

### Key Paragraph

By about 1.6 million years ago, *Homo habilis* seemingly disappeared, to be replaced by an even larger-brained hominid, *Homo erectus*. *Homo erectus* first appeared in Africa, but spread over a wide range. By one million years ago, the species was present in southeastern and eastern Asia and survived in that area until about 300,000 years ago. In that span of time, the fossil record shows that *Homo erectus* remained relatively unchanged.

## **EXTEND**

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

#### **Interview with a Caveman**

**Go to:**

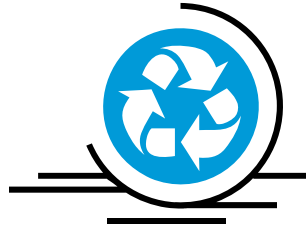
**<http://www.youtube.com/watch?v=kVVSmnqfvc>**

After watching this little clip, consider this:

Let us suppose you had the capability to travel back in time to interview a live caveman. You can ask only four questions to obtain the most information. Think carefully before writing. What are these questions and why did you pick them?

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

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



## Supplemental Student Investigation 21.1 Who Killed the Iceman?

### Introduction

In 1991 hikers who were climbing the mountains that straddle Austria and Italy discovered in melting snow the remains of a man that had been preserved in a glacier for 5,000 years. An examination showed that an arrowhead was embedded in the left shoulder—an injury that clearly could not have been self-inflicted. But who did it, and why? In this activity, students will research this question and others.

### Objectives:

- Review information about mummies,
- Research a well-known ice mummy, and
- Make a class presentation.

### Materials: A variety

- paper and pencils
- computer with Internet access
- markers or similar materials

### Activity Level I

#### Procedures

1. Ask students the following questions about mummies (answers in italics).
  - What is a mummy? (*a preserved body*)
  - How are mummies different from skeletons? (*They have some organs, muscles, or other soft tissue.*) Explain why some bodies become a skeleton, while others become mummies. (*Usually, bacteria or fungi break down soft tissue, leaving a skeleton. When bacteria or fungi cannot grow, the body is preserved and may become mummified.*)
  - How are ice mummies different from Egyptian mummies? (*Ice mummies were preserved accidentally, frozen by their natural environment. Egyptian mummies were preserved on purpose, through a method called embalming.*)
2. Next, ask students to identify what archeologists can learn about a mummy. (*a person's gender, age, diet, cause of death, culture, religion, social standing*)
  - What clues do archeologists look for in a mummy? (*cultural artifacts, details about bones and wounds, stomach contents, where the mummy was found*)
3. Divide the class into two groups and explain that each group will study one of two well-known ice mummies: the Iceman (*discovered in the Alps, believed to have died about 5,300 years ago*) or the Ice Maiden (*a young Inca girl discovered in the Peruvian Andes, believed to have died about 500 years ago*).

- Students will research how archaeologists deciphered clues to learn about the mummy and its culture.
  - They will create a drawing or three-dimensional model of the mummy and its artifacts.
  - They will give a class presentation, using their model to explain what the clues revealed about the mummy and its culture. Students may want to role-play the experts (examples: the team leader who oversees the study, the radiologist who reads x-rays, the pathologist who investigates physical wounds).
4. Provide the list of questions below to guide research. Explain that each group's presentation should address the questions.
- Where was this mummy found? How old is it?
  - What do we know about this mummy's age, gender, religion, cause of death? Explain how scientists know this information.
  - Describe the artifacts found with the mummy. What did they reveal?
  - Describe physical characteristics or marks on the mummy. What do they reveal?
  - What other facts have archeologists concluded about this person's life or death?
  - What has the mummy revealed about its society?
  - What technology was used to study this mummy?
  - Describe the roles of the experts who study this mummy (archaeologists, radiologists, pathologists, botanists, anthropologists).
  - What questions remain unanswered?

Direct students to the following Web sites:

### **ICEMAN**

Ultimate Guide: Iceman

<http://dsc.discovery.com/convergence/iceman/iceman.html>

South Tyrol Museum of Archaeology in Bolzano, Italy

[http://www.archaeologiemuseum.it/f06\\_ice\\_uk.html](http://www.archaeologiemuseum.it/f06_ice_uk.html)

Otzi

<http://www.mummytombs.com/mummylocator/featured/otzi.htm>

The Iceman's Last Meal

<http://www.pbs.org/wgbh/nova/icemummies/iceman.html>

Plants and the Iceman

<http://www.gla.ac.uk/Acad/IBLS/DEEB/jd/otzi.htm>

### **ICE MAIDEN**

Juanita: The Frozen Mummy

<http://dsc.discovery.com/stories/history/desertmummies/juanita.html>

The High Mummies

<http://www.pbs.org/wgbh/nova/peru/mummies/high2.html>

Juanita: Incan Ice Maiden

<http://www.mummytombs.com/mummylocator/featured/juanita.htm>

Andes Expedition: Searching for Inca Secrets (see "Virtual Autopsy")

<http://www.nationalgeographic.com/features/97/andes/>

The Ice Maiden of Mt. Ampato

<http://www.mountain.org/zicemaiden.html>

After both presentations, compare the two mummies in terms of their lives and deaths and what they revealed about their cultures? What questions would students like to have answered about these mummies? Would students like to work as archaeologists on ice mummies or other mummies? Have them explain their answers.

## Evaluation

Use the following three-point rubric to evaluate students' work during this lesson.

- **Three points:** Students were highly engaged in class discussions; demonstrated a clear understanding of mummies, how they are preserved, and why and how archaeologists study mummies; gave a clear and thorough class presentation that answered all the questions in the assignment.
- **Two points:** Students participated in class discussions; demonstrated an adequate understanding of mummies, how they are preserved, and why and how archaeologists study mummies; gave a complete class presentation that answered most of the questions in the assignment.
- **One point:** Students participated minimally in class discussions; demonstrated an incomplete understanding of mummies, how they are preserved, and why and how archaeologists study mummies; gave an incomplete class presentation that answered few or none of the questions in the assignment.

**CBL Biology: Life Science Option**  
**BSCS Green Version 10<sup>th</sup> edition *Biology An Ecological Approach***  
**Lesson Plan for Week 3, Day 5**  
Standards Focus: **8e**

## **PREPARE**

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

We now begin a new chapter. What is the difference between climate and weather? Simply put, climate is the pattern of weather over a period of time. Review this basic concept with the students using the current climate of your area as a starting point. Ask them if they have ever lived in an area with a different climate. Impress upon them that it is climate that has the greatest impact on the plants and animals living in a region. This would be a good opportunity to introduce or reintroduce global warming and how only a degree or two of warming in the total climate of earth can be catastrophic.

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

Introduce five important, useful words from today's reading.

**climate**

**ecosystem**

**biomass**

**abiotic**

**solstice**

- 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.**

Start at the beginning and review the concepts and vocabulary covered so far.

- Mention the setting and main ideas.
- Point to the concept chart as you quickly review it.

The abiotic factors in an ecosystem include the sum of all non-living factors such as heat and cold, humidity, daylight length, and more. Biotic factors include all living things. The word bio means life.

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

### **5. Read Text Chapter 21, Patterns in the Biosphere: Ecosystems of the Past, Text Section 22.1, pp. 624-627.**

- Shared Reading RRP: Read, React, Predict every 2-3 pages  
 Tape  Partner  Choral  Silent  Round Robin Reading

Setting	Characters	Pages
earth	biomes	626
solar system	earth and sun	627

## RESPOND

### 6. Fix the facts. Clarify what is important.

Discuss the reading and add 3-5 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:

Weather and climate are not the same.

Wetter climate results in forests.

Drier climate results in grasslands or deserts.

The seasons on earth are a result of the earth's tilting on its axis.

In other words, at one time of the year, parts of the earth receive more sunlight, so the weather is warmer,

At another time of the year, the reverse is true.

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

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

## EXPLORE

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

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

### 10. Collect data and post.

One possible activity:

## Studying Weather

Everyone talks about the weather. A good way for students to study weather is to become more familiar with weather forecasting. This can be accomplished with the aid of a variety of weather web sites.

### Procedure

If students have computer access, direct them to go to go to [accuweather.com](http://accuweather.com). Allow them to navigate around this site for awhile to get a feel for the site.

### Activity

Direct students to find answers for the following:

- What is the three- to five-day forecast for our area?
- Pick another area and answer the same question.
- Go to the radar screen. How can radar be an aid in predicting the weather?
- What else can you see on the radar page/screen?

### Discussion

Follow up with a discussion on how this information impacts student lives such as in the planning a wedding or related event.

Other possible activities for a  class  group or  individual

Bookmark  Open Mind Portrait  g6 Graphic Organizer

g7 Main Idea Graphic Organizer  c1-12 Cubing  Postcard  Prop

Poster  Ad  Map  Retelling  Reader's Theatre  Cartoon  Rap

### Key Questions

What is the difference between biotic and abiotic systems? Give examples.

How does sunlight affect an ecosystem?

What is an ecosystem?

What is the ecosystem you live in? Give examples of biotic and abiotic components.

Make a diagram of the earth during the various seasons. Include the position of the sun and the tilting of the earth on its axis.

Remember to ask  literal  structural  idea  craft  author  literature  life  evaluate and  inference questions every day.

### Key Paragraph

There are great differences in climates across the face of the earth. The climatic differences result in the evolution of diverse ecosystems. These ecosystems harbor distinct groups of plants, animals, and microorganisms, even though they may be located at the same altitude or latitude,

## EXTEND

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

### Talking About the Weather

The weather is the subject of many conversations. Why do you think this is so? Write a short paragraph explaining your ideas.

12. Close with a short summary.

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