

CBL Biology: Life Science Option

BSCS Green Version 10th edition



Biology, An Ecological Approach Lesson Plan for Week 5, Day 1

Outcomes for Today

Standards Focus: 6b

PREPARE

1. Background knowledge necessary for today's reading

Savannas and Chaparral

Perhaps Hollywood has influenced our understanding of these two important ecosystems. Consider this: The Disney movie *The Lion King* may be one of the most commonly understood examples of a savannah to many students. In addition, a number of contemporary westerns have been filmed in dry ecosystems including the chaparral. Consider *The Lion King* as a theme towards a better understanding of the savanna.

2. Vocabulary Word Wall

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

savanna monsoon nocturnal chaparral nutrient

- 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.

All areas of the earth have been grouped by biologists into large conglomerations of similar ecosystems known as biomes.

Thus far in this chapter study, we have looked at the following biomes:

The **tundra**, a cold area with stunted plant growth

The **taiga** which includes the vast coniferous forests of the far north

The mid-latitude temperate (deciduous) forests

The tropical rain forests

The various grasslands

For the most part, it is precipitation and latitude that determine the type of vegetation that makes up a biome.

4. Read directions for investigation

5. Read text. Chapter 22, Biomes Around the World, Text Section 22.9 – 22.10, pp. 639- 641

Shared Reading RRP: Read, React, Predict every 2-3 pages

Tape Partner Choral Silent Round Robin Reading

Setting	Characters	Pages
African savanna herbivores predators chaparral	elephants, giraffes, rhinos lions, leopards, cheetahs dense spiny shrubs	639 640

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 savanna is a type of grassland with a few scattered trees.

Monsoons are large rainy storms.

The savannah is a place where all the typical animals such as elephants, zebras, wildebeests, and gazelles live.

The chaparral is a biome with a bunch of scrubby bushes

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

The Lion King

Procedure

Go to the following website:

<http://www.teachwithmovies.org>

As mentioned previously, this is a very good website to pay the nominal fee to gain access to lesson plans. As with the others, *The Lion King* lesson plans contain a wealth of information to be used with the study of biomes. The savanna is the setting for this tale. The website contains a plethora of questions for discussion.

Activity

Allow students to watch this movie with their biology glasses on. Stop the progress at key points to discuss.

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 is the savanna different from the other grasslands?

What are the three distinct seasons of the savanna?

Read the descriptions of the various animal inhabitants of the African savanna. With this information, draw a food web including the names of the various animals mentioned on page 639 of the text.

How do animals in the savanna and chaparral survive the dry seasons?

How does wildfire impact the chaparral?

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Key Paragraph

The savanna is a tropical or subtropical biome with a few scattered trees. The savanna usually gets much more precipitation than do temperate grasslands. However, rain falls on the savanna only during a few months of the year. Three distinct seasons characterize the savanna: cool and dry; hot and dry; and warm and wet. Most savanna soils are rather poor. Savannas cover wide areas of central South America, central and southern Africa, and a strip across northern Australia. Portions of southern Asia exhibit savanna-like thorn forest vegetation in the dry seasons between monsoons, when trees have lost their leaves.

EXTEND

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

The Circle of Life

Here is the chorus of the theme song from *The Lion King*:

It's the Circle of Life
And it moves us all
Through despair and hope
Through faith and love
Till we find our place
On the path unwinding
In the Circle
The Circle of Life

12. Close with a short summary

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

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Biology, An Ecological Approach Lesson Plan for Week 5, Day 2

Outcomes for Today

Standards Focus: 6b

PREPARE

1. Background knowledge necessary for today's reading

The only thing in nature that is constant is change. No community remains the same forever. This is a concept that is somewhat hard to grasp as long-term change is sometimes hard to see in our hurried up pace of a world. Succession takes time. As the plant communities move towards their climax, the changes are even more subtle. The importance of accurate study methods is one way in which you could introduce this lesson. How do biologists measure change over time? New tools like time lapse photography can be very helpful. There are a number of sites on the web.

2. Vocabulary Word Wall

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

eternal abiotic ground zero succession climax community

- 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 world of biomes has been the theme for the past week.

We have journeyed throughout the regions of the earth visiting the various ecosystems.

Although precipitation is often the primary determining factor in biome development, local topography as well as temperature range are two additional key factors.

These are the non-living (abiotic) elements.

4. Read directions for investigation

5. Read text. Chapter 22, Biomes Around the World, Text Section 22.11 – 22.12, pp. 641- 643.

Shared Reading RRP: Read, React, Predict every 2-3 pages

Tape Partner Choral Silent Round Robin Reading

Setting	Characters	Pages
coniferous forest succession from rock	bare rock, lichens, meadow, aspen, spruce/fir	
succession from water or burned area	marsh/annual plants, meadow, aspens, spruce/fir	643 643

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:

No ecosystem remains the same forever.

Floods, fires, and volcanic eruptions can severely impact natural ecosystems.

There are many times when human activities also severely disrupt (in other words, mess up) natural ecosystems.

When scientists set off a nuclear explosion in the desert, it killed everything at ground zero.

Ground zero was the exact center of the blast.

Scientists could then study the changes in the plant communities over time at this location.

These changes in a plant community over time are known as succession.

The last community in a series of ecosystems in a specific area is known as the climax community.

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

Speeding up Succession

Activity

Succession takes place over time. Several web-based programs can assist students in understanding succession. Here is one such program:

http://bio.rutgers.edu/~gb102/lab_13/index.html

Understanding succession is key concept to understanding biodiversity. This website offers a plethora of activities in biodiversity and succession:

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

Procedure

After reviewing websites with students, assign student groups to develop a synopsis of a section of each website for sharing with the class.

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

In your own words, explain succession.

Explain succession without words, but rather using a drawing formatted like a comic strip.

What are some of the conditions that can start succession?

What is a climax plant community? Give an example.

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

Key Paragraph

Once established, the climax community is relatively permanent. Suppose a single spruce tree dies of old age. An aspen will not replace it because the space that the spruce once occupied is too shaded by neighboring spruces for aspen to grow. A young spruce, tolerant of shade, probably will take its place.

EXTEND

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

Succession

Observe Fig. 22.23 on page 643 of the student text.

Using the format:

S (*First letter of a word, etc.*)

U

C

C

E

S

S

I

O

N

Develop a word list representative of succession by including the first letter of each line as a letter in the word **succession**.

12. Close with a short summary

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

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Biology, An Ecological Approach Lesson Plan for Week 5, Day 3

Outcomes for Today

Standards Focus: 6b

PREPARE

1. Background knowledge necessary for today's reading

This chapter is about the patterns of succession in plant communities. This is an important concept and not all ecologists are in agreement as to the predictability of the process. One thing is certain, however, and that is that human activities can be severely disruptive to natural ecosystems. Knowing this pattern of succession can assist scientists in helping ecosystems in the recovery process. Nature is incredibly resilient when the conditions are right.

2. Vocabulary Word Wall

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

predation symbiosis competition niche bioequilibrium

- 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.

Various closely related ecosystems are grouped together into biomes in order to facilitate study and description.

Ecosystems in a particular area have now remained the same through time.

They are constantly evolving.

Succession is the process of one ecosystem replacing the current or previous one.

The climax community is the name given to the final ecosystem in a series of previous evolving plant communities in an area.

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4. Read directions for investigation

5. Read text. Chapter 22, Biomes Around the World, Text Section 22.13 & Investigation 23.2, pp. 643- 645 and 654- 655.

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

Setting	Characters	Pages
Mt. St. Helens, WA after the volcanic eruption	Alpine lupine, alder	645
North American prairie	black-footed ferret	644

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:

Scientists explain concepts of biology by using models to describe processes.

Biodiversity is all about the many complex webs of life found on earth.

Mt. St. Helens is a good place for scientists to study succession. This is because a volcanic explosion wiped out the many plant communities on the mountain.

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

How do we understand long-term changes in an ecosystem?

Introduction

Read with students and explain the narrative of investigation 22.2 on page 654 of the student text.

Procedure

Go over the procedure with the students on the same page.

Activity

Make sure students follow the directions for recording their observations

Discussion

Using their collected data, discuss with students the following points.

What were noticeable changes in this ecosystem?

What kept the mice from expanding their range?

What factors keep the population of wolves from expanding?

Name some of the climatic factors that were responsible for ecosystem changes.

Why is this an artificial model?

For further discussion visit this website on biodiversity:

<http://www.daversitycode.com/>

This is an excellent animation on the concept of biodiversity.

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

Explain succession to the average person walking out of a 7-11 store.

Explain several types of examples of disruptions in ecosystems.

What is a climax community?

Explain biodiversity using examples.

Why is biodiversity on earth threatened these days?

Why is Mt. St. Helens a good place to study succession?

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Key Paragraph

When disturbances are severe and frequent, only organisms that are good colonizers may be able to live in a community. When disturbances are mild and rare, the species that are most competitive will make up the community. Species diversity is greatest when disturbances are moderate because organisms typical of different successional stages are likely to be present.

EXTEND

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

My Personal Succession Story

Many times understanding a scientific concept or principle (such as succession) can be enhanced by personalizing the idea. Ask students if they are the same person they were several years ago. Ask them where they see themselves going in terms of their future career goals. Now direct them to write a short paragraph entitled "My Succession Story." Allow their writing to be free form. When you read their work, look for themes that might be applied back to the biological principles of succession.

12. Close with a short summary

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

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Biology, An Ecological Approach Lesson Plan for Week 5, Day 4

Outcomes for Today

Standards Focus: 6b

PREPARE

1. Background knowledge necessary for today's reading

The importance of the human influence on biomes has already been mentioned. There is increasing attention given to the study of the impact humans are making on earth. Al Gore's book and movie, *An Inconvenient Truth* has opened the way for discussions on global warming. In this lesson, the human need for land use is the topic. In order to build student interest, you may want to open with a discussion about land use and the rights of people and their relationship to the land. Is the European view of private property different from the traditional Native American worldview in this area? Ask students to provide examples of what they know to be severely altered landscapes. Probe with questions about why land stewardship is important.

2. Vocabulary Word Wall

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

herbicide organic transpiration deforestation vincristine

- 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.

Biomes are groups of similar ecosystems.

The naming and descriptions of ecosystems and biomes has allowed students to use a similar language in the learning process.

Ecosystems rarely remain constant. They evolve and are replaced by other ecosystems in a process known as succession.

Human activities have caused disruption in many ecosystems.

Natural disruptions such as floods, volcanoes, and tidal waves, can also alter an ecosystem and, therefore, succession.

4. Read directions for investigation

5. Read text. Chapter 22, Biomes Around the World, Text Section 22.14 – 22.15, pp. 646- 647.

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

Setting	Characters	Pages
plains of the Midwest the tropical rain forest	corn and wheat	646
	two thirds of all plant and animal species on earth	647

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:

I never realized that so much of the environment of this country has been altered from what it once was.

Humans simplify the natural environment to grow crops.

Organic farming does not make use of pesticides and herbicides and is less destructive to natural ecosystems.

The tropical rain forest is a very diverse habitat with many species of plants and animals.

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

The Tropical Rainforest

Procedure

Many students already have a bit of an interest in the tropical rainforest due to the amount of publicity in recent years. This website has a wealth of information along with many activities on this biome.

<http://www.stemnet.nf.ca/CITE/rforest.htm>

Activity

Allow students to navigate through the website. Note: if you don't have access to a computer lab, you can download a variety of activities. Divide the class as needed into project-based groups to be engaged in various parts of this lesson.

Discussion

Follow up with a discussion along the lines of, "now what?". Make a class decision to do something towards protecting these important resources. Call students to action and incorporate some sort of letter-writing campaign into your lesson.

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 has the land of the former deciduous forest in the United States changed in the last 200 years?

Why is this so?

Why do humans simplify ecosystems?

What is the danger in a simplified ecosystem?

Explain organic farming.

Of what value are the tropical rain forests?

What happens to the soil in a tropical rain forest after the trees are cut down and removed?

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

Key Paragraph

The growing human population's demands have placed the world's deciduous and tropical rain forests in jeopardy. These tropical rain forests are home to more than 50 percent of all species on earth. Already, more than half the original area of tropical rain forest has been cleared for cattle grazing, fuel wood, and farming. Almost all tropical forests will be gone or severely damaged in about 30 years if clearing and degradation continue at the current rate.

EXTEND

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

We Need A Savior!

Discuss with students how often an animal can represent a cause. For example, Smokey the Bear was the poster bear for preventing forest fires. Recently, the polar bear has become the poster animal in the fight against global warming. Ask students to research and come up with an animal who is threatened by tropical rain forest destruction. Assist them in designing a poster for their animal representative. Make sure they have a catchy "sound bite" message if possible.

12. Close with a short summary

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

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Biology, An Ecological Approach Lesson Plan for Week 5, Day 5

Outcomes for Today

Standards Focus: 6b

PREPARE

1. Background knowledge necessary for today's reading

In this lesson, students are introduced to additional negative human influences on natural ecosystems. These are the increase in vast areas of desert (desertification) and the phenomenon of acid rain. These may seem pale in comparison to the overall looming consequences of global warming, but in actuality they are interrelated. Engage students in a discussion about this concept of interrelatedness. Try and find answers to the “so what?” attitude of many folks these days. Talk about a responsibility to future generations and what this means.

2. Vocabulary Word Wall

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

desertification drought overgrazing particulate acid rain

- 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.

On this earth, typical types of plant cover develop over time in various regions of the earth.

This development is due to factors of precipitation, temperature, and local topography.

Each unique area of similar ecosystems is known as a biome.

Biomes of the earth include the tundra, forests (tropical and temperate), grasslands, deserts, and the savanna.

All ecosystems undergo a series of changes over time.

Sometimes natural disruptions alter the rather predictable patterns of change.

Usually, ecosystems are altered by human activity such as clearing of the forest and grasslands and the planting of crops or building of cities.

4. Read directions for investigation

5. Read text. Chapter 22, Biomes Around the World, Text Section 22.16 – 22.17, pp. 647- 650.

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

Setting	Characters	Pages
the earth	increasing deserts and acid rain	648

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:

It seems as though humans are messing up the earth's habitats in many ways.

Desertification and acid rain are just two more examples.

Drought is when there is not enough rainfall to sustain the present habitat.

Overgrazing is when humans allow their animals such as cows, goats, and sheep to eat almost all the plant life off the land.

Drought and overgrazing helped contribute to the Dust Bowl.

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

Back to the Pasture Profits

Introduction

This would be a good time to return to the interactive Technology Resource Package (CD) program contained with this text.

Procedure

Follow the directions for the Pasture Profits section of the **The Commons**. Assist teams of students in participating in the activity on Pasture Profits.

Activity

Allow students to work on the program. After some introductory use, divide the class into two groups with a challenge to maximize the profits.

Discussion

At the completion of this program participation, engage students in a discussion on their learning and develop this into a chart for the classroom.

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

Explain the process of desertification.

What environmental factors led to the Dust Bowl in the United States in the 1930's?

Create a diagram/illustration of the acid rain process.

What are the effects of acid rain on plants and lakes?

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

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Key Paragraph

No ecosystem is permanent. Natural and human disturbances can change the character of an ecosystem. As a result, a succession of communities may occur, ending, at least temporarily, in a relatively stable climax community. All ecosystems around the world are undergoing changes because of human activities. The cutting of the tropical rain forests, the loss of grasslands to desertification, and acid deposition in North America and Europe are just a few examples.

EXTEND

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

Why Me?

After a review on the acid rain process, direct students to write a "paragraph plea" from the perspective of a little pine tree atop a mountain in Maine. The pine is "asking" for help in surviving. Have students write about the effects of acid rain on the little tree.

12. Close with a short summary

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