

CBL BIOLOGY: LIFE SCIENCE OPTION

BSCS Green Version 10th edition

Biology An Ecological Approach

Lesson Plan Quarter 1, Week 2, Day 1



Outcomes for Today

Standards Focus: 1fgh 6def

PREPARE

1. Background knowledge necessary for today's reading.

All organisms, including humans, must eat to gain and use energy. Humans are consumers. They cannot make their own food like plants. If energy in (to humans) exceeds energy expenditure (exercise, etc.) energy is stored as fat.

2. Vocabulary Word Wall.

Introduce 5 important, useful words from today's reading.

eat **ingredients** **plant** **animal** **interrelationship**

- 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 of the chapter and review the concepts and vocabulary covered so far

- mention that all energy ultimately comes from the sun
- producers make food
- consumers eat food
- there is competition for food
- decomposers break down producers and consumers

4. Read directions for investigation/activity.

1.2 pp 21-22

Note: Students will be making a list of the food they have consumed. First have them make a list of everything they have consumed in a day (or 24 hour period). Help students understand that many of their food items are combinations of many ingredients. Use examples like burritos or whatever food your student population typically consumes.

5. Read text.

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

setting	Characters	pages
Home, school, (wherever you happen to eat)	You, food	22

RESPOND

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

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

- discuss the text to 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:

Determining individual food sources is not real easy.
 Food sources have different names depending on the language and culture.
 It is more difficult to trace the origin of junk or processed food. For example, where do "Twinkies" come from?

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

Investigation 1.2 pp. 21-22 in text. See teacher notes attached to this lesson plan. (Page 5)

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

Bridge to a language building activity

Teach a Mini Lesson using *Write AHEAD* pages #

[The Write Ahead Activities are on individual work-pages in a separate file]

Another possible activity (several days). The movie Super Size Me has many relevant connections to the human food chain. Go to:

<http://www.electricsadows.com.au/files/2394602707.pdf>

If time permits use this as a teaching extension. This link contains teaching suggestions and lesson plans to go with the movie. This resource is a unit in and of itself with connections to health and social issues.

Key Questions

How do you make a decision on what to eat?

Trace the energy locked in the food you ate all the way back to the producer level.

Do you think vegetarians are healthier individuals? Why?

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

Key Paragraph

How do you fit into the web of life? You can begin to form a picture of your role in the biosphere by relating the food you eat for one day to the plants and animals from which it came and to the other organisms with which those plants and animals interact.

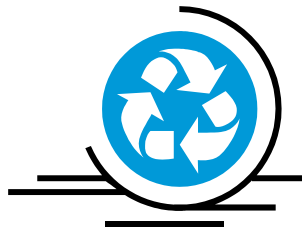
EXTEND

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

There has been much in the news these days about childhood obesity. Why do you think it is difficult for people to talk about the weight of their children? Write a short paragraph describing why you think this is so. You could begin with something like: The reason it is difficult for parents to talk about overweight children is....

12. Close with a short summary.

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



Ch. 1 Student Investigation # 1.2

You and the Web of Life *Teacher Notes*

Note: This activity is essentially the same as the one outlined in the text.

Objective: To gain a beginning understanding of how you fit into the web of life.

Materials: Observation Form 1, pair of working eyes, pencil

Directions: Follow the procedures as outlined in the text on pages 21-22

In summary:

Procedure

Level I

Students list all the foods they ate in a 24 hour period.

Students name the plants (producers) on this list.

Students name the animals on this list.

Individual students will then create their "personal" food chain.

Level II

Teams of students will then create their group food web. They will combine their food chains into a team food web detailing the energy flow and connections between individual food chains.

Discussion

Discuss plant and animal origins of food.

Discuss competition among animals and humans for food.

Discuss competition among various societies for food.

Discuss the role of decomposers in this process.

CBL BIOLOGY: LIFE SCIENCE OPTION

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Biology An Ecological Approach

Lesson Plan Quarter 1, Week 2, Day 2



Outcomes for Today

Standards Focus: 1fgh 6def

PREPARE

1. Background knowledge necessary for today's reading.

All of a living thing's activities require energy.
 Energy comes from the food an organism eats.
 The sun is the source of energy produced by plants.

2. Vocabulary Word Wall.

Introduce 5 important, useful words from today's reading.

cycle
heat

chemical energy

solar energy

photosynthesis

- 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 of the chapter and review the concepts and vocabulary covered so far.

Mention the food chain and the human/personal food chain

Refer back to the food webs

Review the terms producer, consumer, and decomposer

Remember that all consumers eat other organisms

4. Read directions for investigation/activity.

5. Read text. Ch1 *The Web of Life* pp.11-13

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

setting	Characters	pages
A path	Runners	11
Drop of water	One-celled organism	12

RESPOND

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

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

- discuss the text to 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 runners use more energy than the “blob” (page 11).
 Photosynthesis is a process in which plants “make” food.
 Energy is lost through heat.
 A community of living things will die if it runs out of energy.

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

Listed here are two links to related activity sites. The first site deals with matter and energy and is a good resource to understand the concept of matter (Section 1.5). You could use this site as a teaching aid in the discussion.

Matter and energy

<http://web.jjay.cuny.edu/%7Eacarp/NSC/2-matter.htm>

The next site goes into good detail about hybrid vehicles. Of course hybrid vehicles are all about using less energy by conserving energy, storing generated energy, and contributing to a cleaner atmosphere by limiting vehicle emissions. This site could be used as a teaching aid in explaining hybrid vehicles and students could research hybrid vehicles. Related student activities could include a student diagram of a hybrid vehicle. How about the first hybrid low rider?! Students could design and post their “hybrid” creations, once they understand some of the basics of hybrid vehicle construction and operation.

Your Vehicle

http://www.eere.energy.gov/consumer/your_vehicle/

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

Bridge to a language building activity

Teach a Mini Lesson using *Write AHEAD* pages #

[The Write Ahead Activities are on individual work-pages in a separate file]

Instruct students to take a detailed look at the Energy Pyramid on page 69 of the text (Figure 3.10). Ask them to quickly list descriptive words and a descriptive sentence.

Key Questions

What is the difference between energy flow and a nutrient cycle?

What is needed for plants to make food?

Are you losing energy right now? Explain this.

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

Key Paragraph

Where do you get your energy? It may take some imagination to see energy in a hamburger and a pile of french fries. There is energy in this food. It is chemical energy. Chemical energy is found in the structure of the molecules that make up the meat and potatoes.

EXTEND

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

Have students make an outline representing each one of them. You may want to run a graphic with a stylized body outline (sort of like a "gingerbread man") Direct them to then graphically organize where they generally get their energy (diet). Have their figure say something (cartoon format) about their diet. Post these on the billboard.

I'm Gary and I like to eat!



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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Biology An Ecological Approach
 Lesson Plan Quarter 1, Week 2, Day 3



Outcomes for Today

Standards Focus: 1fgh 6def

PREPARE

1. Background knowledge necessary for today's reading.

Completion of investigation 1.2 Level I
 Food chains involve the transfer of energy.
 Food is a source of energy.

2. Vocabulary Word Wall.

Introduce 3 important, useful words from today's reading.

human herbivore

human carnivore

human omnivore

- 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 of the chapter and review the concepts and vocabulary covered so far

- Review the results from Investigation 1.2 *Level I*.
- Review the concepts of producer, consumer, and even decomposer.
- Talk a little about human diet and energy.

4. Read directions for investigation/activity.

Read Investigation 1.2 pp. 21-22 in the text. Pay particular attention to the **Going Further** section on page 22.

5. Read text.

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

setting	Characters	pages
Your classroom	The students in the food chain/web.	22

RESPOND

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

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

- discuss the text to 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 food chain for humans is a little more complex since much of our food is mixed.

Many humans eat a variety of foods including a great deal that may not be healthy.

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

Investigation 1.2 pp. 21-22 in text. See teacher notes attached to this lesson plan (page 13). This is a *Level II* activity.

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

Bridge to a language building activity

Teach a Mini Lesson using *Write AHEAD* pages #
 [The Write Ahead Activities are on individual work-pages in a separate file]

Key Questions

What are some other living connections we have with other living things?

What kinds of images do you see when you hear the term, *Web of Life*?

What do you think is meant by the expression "You are what you eat"?

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

Key Paragraph

Food webs and food chains tend to keep the numbers of living organisms in balance.

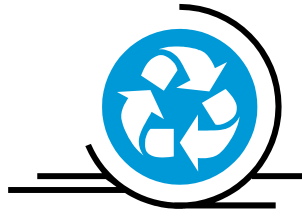
EXTEND

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

Many scientists say that our human population is out of balance in that more children are being born than people who die. Do you think any couple should have as many children as they want to? Why? Write a short paragraph explaining and defending your answer.

12. Close with a short summary.

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



Ch. 1 Student Investigation # 1.2

You and the Web of Life *Teacher Notes*

Note: This activity is essentially the same as the one outlined in the text. This is *Level II* and so involves building upon *Level I*. If you have not done *Level I*, it must be done first.

Objective: To gain a beginning understanding of how you fit into the web of life.

Materials: Observation Form 1, pair of working eyes, pencil

Directions: Follow the procedures as outlined in the text on pages 21-22

In summary:

Procedure

Level I

Students list all the foods they ate in a 24 hour period.

Students name the plants (producers) on this list.

Students name the animals on this list.

Individual students will then create their "personal" food chain.

Level II

Teams of students will then create their group food web. They will combine their food chains into a team food web detailing the energy flow and connections between individual food chains. The team may want to perform a rap about their web.

Discussion

Discuss plant and animal origins of food.

Discuss competition among animals and humans for food.

Discuss competition among various societies for food.

Discuss the role of decomposers in this process.

CBL BIOLOGY: LIFE SCIENCE OPTION
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Biology An Ecological Approach
Lesson Plan Quarter 1, Week 2, Day 4



Outcomes for Today

Standards Focus: 1fgh 6def

PREPARE

1. Background knowledge necessary for today's reading.

All matter (including living things) is composed of smaller and smaller particles.
All matter has weight and takes up space.
Matter cycles through our world and is neither created nor destroyed. It just changes form; for example, water – ice – water vapor.

2. Vocabulary Word Wall.

Introduce 5 important, useful words from today's reading.

atom **element** **compound** **molecule** **matter**

- 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 of the chapter and review the concepts and vocabulary covered so far.

All organisms acquire energy and matter to live.
Living things are grouped according to the way they acquire and use energy.
The sun is the source for all energy on earth.

4. Read directions for investigation/activity.

5. Read text. Ch1 *The Web of Life* pp.13-15

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

setting	Characters	pages
everywhere	atoms	13
everywhere	element	13
everywhere	compound	13
everywhere	compound	13

RESPOND

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

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

- discuss the text to 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:

Atoms are smaller than molecules.

Compounds are more complex than elements.

Several elements and compounds are very common in living things (carbon, hydrogen, etc.).

Plants rearrange atoms to produce food.

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

Matter changing form.

Materials needed:

Ice cubes and a cup.

Procedure

Ask the question, "If all the icebergs in the world melted what would happen?"

Put several ice cubes (solid) in a cup of water (liquid) and fill the cup to the exact level as the lip of the cup (with the ice cubes sticking / floating above the level of the cup). Ask students what will happen when the ice melts. Will the water level raise and spill out? Will the water level stay the same? Will the water level drop? Proceed with the experiment and record the results. Ask students to explain the results and extend their answers.

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

Bridge to a language building activity

Teach a Mini Lesson using *Write AHEAD* pages #

[The Write Ahead Activities are on individual work-pages in a separate file]

Read the text on page 106 on the Carbon Cycle and Global Warming. Ask students what they have heard about this? Arrange to see (or rent) *An Inconvenient Truth*, Al Gore's documentary on global warming. For additional study guide information go to:

<http://www.coejl.org/climatechange/itstudyguide.php>

Key Questions

Diagram the following particles:

atom

molecule

Explain how matter cycles through the biosphere. Give examples.

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

Key Paragraph

Because living things are so different from non-living things, scientists once believed that living matter contained unique elements. We now know this is not the case. Of the more than 100 different elements found on earth, about 30 are used in the makeup of organisms.

EXTEND

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

The molecules in your body were once part of other organisms including possibly dinosaurs and other extinct plants and animals. Write a short paragraph describing how a molecule traveled through the ages and different living things before arriving in your body. This could be a "Once upon a time..." tale.

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 10th edition

Biology An Ecological Approach

Lesson Plan Quarter 1, Week 2, Day 5



Outcomes for Today

Standards Focus: 1fgh 6def

PREPARE

1. Background knowledge necessary for today's reading.

Energy flows through food chains when one organism consumes (or is decomposed by) another.

Food webs are connected food chains.

One part of a food web can have an impact on other parts.

A community of living things contains many connections.

2. Vocabulary Word Wall.

Introduce 5 important, useful words from today's reading.

roles

feast

hover

decay

balance

- 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 of the chapter and review the concepts and vocabulary covered so far.

Review the energy flow concept through food chains and food webs.

Explain the difference between a cycle and flow.

Review the process of energy coming from the sun through plants (producers) to the various consumer levels.

4. Read directions for investigation/activity.

5. Read text. Ch1 *The Web of Life* pp.8-10

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

setting	Characters	pages
A typical plant and animal community.	Decomposers, mice, grasses, raspberry bush, spider, insects, grasshopper, birds, rabbits, snake, owl, fox, mountain lion	10

RESPOND

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

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

- discuss the text to 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:

All living things eventually recycle into something else.
 In nature, nothing is wasted.
 Humans, however, do waste resources, food.

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

Follow procedures in attached supplemental investigation on *Food Chains and Food Webs* attached to this lesson plan.

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

Bridge to a language building activity

Teach a Mini Lesson using *Write AHEAD* pages #

[The Write Ahead Activities are on individual work-pages in a separate file]

Look at Figure 3.11 on page 70 of the text. How might this activity impact the food web?

Key Questions

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

Key Paragraph

When all the food chains in a community are connected to each other, a food web is formed. What would the web look like if there were two spiders (*Figure 1.7*) instead of just one?

EXTEND

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

On the next page is a song about the Web of Life. Write at least two new verses for this song based on your understanding of the Web of Life.

The Web of Life

© 1996 by Walkin' Jim Stoltz, Walkin' Jim Music, BMI

Chorus:

We are a part of the web of life,
 We are a part of the web of life,
 Oh, we're just one strand but we'll give it a hand,
 Part of the web of life!

1) The trees are a part, and the ferns are a part,
 The moss and the flowers and the bushes are a part,
 All the growing and the green if you know what I mean
 Part of the web of life.

2) The whales are a part, and the sharks are a part,
 The jellyfish, the coral, and the clams are a part,
 What would life be without the creatures of the sea?
 They're part of the web of life.

(Repeat Chorus)

3) The owls are a part, and the robins are a part,
 The sparrows, and the eagles, and the seagulls are a part,
 All the birds in the sky, another piece of the pie,
 They're part of the web of life.

4) The bears are a part, and the mice are a part,
 The skunk and the wolf and the moose are a part,
 All the creatures of the land, they know where they stand,
 Part of the web of life.

(Repeat Chorus)

5) The bees are a part, and the fleas are a part,
 Mosquitoes and the spiders and the ticks are a part,
 They can sting, stick, or bite, but they all have a right,
 Because they're part of the web of life.

(Repeat Chorus)

6) The snakes are a part and the frogs are a part,
 The turtle and the gator and the lizard are a part,
 They creep and they crawl, another part of it all.
 Part of the web of life.

(Repeat Chorus)

7) All the Life on the land and the Life on the seas,
 All the Life on this Earth, you and me,
 We're all tied to each other and the Earth is our Mother.
 We're all part of this Web of Life.

(Repeat and fade Chorus)

12. Close with a short summary.

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



Supplemental Student Investigation
Food Chains and Food Webs
Student Instructions

Objective: To understand the steps and energy flow in a food chains and food webs

Materials: A variety of magazines with many pictures of plants and animals
Scissors and glue sticks

Introduction

Read and review the concept of food chain and food webs in your text (BSCS Green Version p. 8-10). Be sure to include the terms producers, consumers, and decomposers. Make sure you study Figure 1.7 and 1.8 to gain a better understanding of food chains and food webs.

Your teacher has a variety of samples of various living things. Your task is to arrange these into several food chains. Show the direction of energy flow in your various food chains with arrows. Your completed assignment could look something like Figures 1.7 and 1.8.



Supplemental Student Investigation Food Chains and Food Webs *Teacher Notes*

Objective: To understand the steps and energy flow in a food chains and food webs

Materials: A variety of magazines with many pictures of plants and animals
Scissors: (Blunt nosed for certain populations) and glue sticks

Introduction

Review the concept of food chain and food webs (BSCS Green Version p. 8-10) with students using specific examples related to their level of understanding. Be sure to include the terms producers, consumers, and decomposers. Talk a little about humans and their position in the food chain using specific examples such as eggs, hamburger, cereal, and other foods related to your student population. There are various levels of this activity. You can take it as far as you want depending on time and your student population.

Activity Level I (Demonstration)

Pre-cut a variety of examples of producers, consumers, and decomposers and distribute them to individuals/groups. Instruct students to arrange the pictures into a single food chain. Ask them to identify producers, consumers, and decomposers. Mix up the pictures and do this several times.

Note: as a variation, include several pictures of non-living objects (rocks, minerals, water) and see how students respond.

Activity Level II

Instruct students to cut out pictures from magazines and arrange pictures on a blank sheet in a proper food chain. Make sure students label and provide arrows in the direction of energy flow. (Note, selection of nature magazines, such as National Wildlife, National Geographic, etc. can provide good resources with a minimum of paper waste. Magazines such as People and Low Rider may be a challenge to find appropriate pictures although interest will certainly be high!)

Activity Level III (Demonstration)

Again review the concept of food web and using the process outlined in Level I, construct a food web with a variety of producers, consumers, and decomposers.

Activity Level IV

Using the process outlined in Level II, have students construct their individual food webs utilizing the resources at hand.

Activity Level V

Have students combine some of their food chains into a group food web.

Note: Students can share their work through a “pair share” or class discussion format. Student work should be collected for display.