

CBL BIOLOGY: LIFE SCIENCE OPTION
BSCS Green Version 10th edition
Biology An Ecological Approach
Lesson Plan for Week 6, Day 1



Outcomes for Today

Standards Focus: 1ghi 9af

PREPARE

1. Background knowledge necessary for today's reading.

Food Food Food

Begin the background discussion with a question such as, "What did you eat for breakfast (or lunch or dinner)?" How do you suppose the food matter got from your slice of pizza to the muscle in your leg, or fat in your body? Ask students to consider this question: "Why do you suppose there are so many overweight people in this country?" The next five days' lessons are all about food processing. Ask students to make a statement about food and humans. Post some of their statements on the wall and refer to them during this lesson as well as during the following four lessons.

2. Vocabulary Word Wall.

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

esophagus

ingestion

bile

masquerade

villi

- 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.

Chemical reactions are essential for life.

Matter cannot be created or destroyed, it just changes form.

Energy is either consumed or released during bodily functions.

4. Read directions for investigation/activity.

5. Read text. Ch 15, The Human Animal: Food and Energy, Text Section 15.1-15.4 pp. 416-422

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

Setting	Characters	Pages
tongue	taste buds	418
stomach	sphincter	419
small intestine	villi	421

RESPOND

6. Fix the facts. Clarify what's 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:

Chewing up your food is somewhat like splitting up large chunks of firewood into kindling in order to get the fire going.

The movement of swallowed food down the esophagus is known as peristalsis.

The stomach does more than just hold food. It is somewhat like a churning washing machine.

The partially digested food moves from the stomach into the small intestine where it is absorbed into the bloodstream.

The total surface area for absorption available in the average human small intestine is equal to about one-half the surface size of a regulation basketball court.

The primary purpose of the large intestine is to absorb water from the waste products of digestion.

These waste products are known as feces and they leave the body as poop.

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:

Surface area

Procedure

Gather a supply of recycled 8 ½ X 11 paper sheets and proceed to a basketball court. Ask students to estimate how many sheets will be needed to cover one half of the court? Next direct students to begin placing the sheets on the court in such a fashion that they don't overlap. (Note: It might be a good idea to do this indoors because of the wind factor.) Once students have covered the entire half court, count the number of sheets of paper and have students determine the square footage of the surface area. Determine by division the number of sheets each student is to gather up. Next ask each student to form a cylinder of each sheet by rolling and taping the paper into an eleven inch tube. Ask each student to connect each of their individual tubes with their other tubes into a continuous tube. Next, ask each student to join their section of tubes with the other students to form a single long tube.

Discussion

Discuss these questions with students or have them write down their observations:

How long is the tube?

Do you think this tube would fit in the average human?

How do you suppose the surface area could be increased?

What has this got to do with digestion and absorption?

Follow up

Show students multi-dimensional pictures (such as the one in the text on page 421 in the text, Figure 15.4) of the inside of the small intestine.

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 mechanical and chemical digestion? Give an example of each.

Why is splitting wood into kindling similar to eating?

Make a diagram of the path of food as it travels through the human body.

What is known about the amount of food that can be absorbed by the human digestive system? (Put another way, is there a limit to the amount that can be absorbed?) Why do you think this is so?

How long does it take for a complete digestive cycle to take place?

What is the function of the large intestine?

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

Key Paragraph

Humans consume an amazing variety of food. Your lunch may include a hamburger and fries, and perhaps pizza, and a soft drink. Later in the afternoon, you may add a candy bar, an ice cream cone, or popcorn and more soft drinks to your digestive track. How can your body use the protein in hamburger and the potato starch from the French fries to grow and to provide your muscles with energy? How do plant and animal tissues you eat become human cells and bones?

EXTEND

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

This is your stomach talking

Set the stage by asking students to imagine that their stomach could think and talk. Ask them to write a paragraph from the perspective of their stomach in which their stomach talks to them about their last meal and gives its professional opinion on how they (the student) have treated their stomach in recent days. Indicate several things to consider including speed of eating and the nature of the food consumed.

12. Close with a short summary.

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

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Lesson Plan for Week 6, Day 2



Outcomes for Today

Standards Focus: 1ghi 9af

PREPARE

1. Background knowledge necessary for today's reading.

The next two lessons are all about complex organic chemical reactions that take place in the body, that allow food products to become available to individual cells. These are controlled chemical reactions and this is an important concept. Try to prompt students' thinking along these lines by using "controlled reaction metaphors" such as slow motion visualization. The visual picture of a slow motion mime is an example of such an image. What factors control the reactions? Another metaphor that might be thought of is one of the metering lights on a freeway on-ramp during rush hour traffic.

2. Vocabulary Word Wall.

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

glucose mitochondria respiration equation transport

- 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.

Food is required for energy.

Upon entering the body, food is first broken down by mechanical digestion (chewing) followed by chemical digestion (in the stomach and small intestine).

Food molecules are absorbed into the human bloodstream in the small intestine through the action of villi.

Blood then circulates the food to the cells.

4. Read directions for investigation/activity.

5. Read text. Ch 15, The Human Animal: Food and Energy, Text Section 15.5-15.7 pp. 422-426

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

Setting	Characters	Pages
Individual cell	mitochondria	423

RESPOND

6. Fix the facts. Clarify what's 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:

Cells need a constant supply of energy to keep functioning.

The release of energy in the cells is like controlled burning.

The chemical reactions in the cells require oxygen.

The energy-producing chemical reactions occur primarily in the mitochondria of the cells.

There are many chemical reactions in this process.

How did scientists figure this out anyway?

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:

Physical and Chemical Digestion

See **Supplemental Student Investigation 15.1** attached to this 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

Name some of the chemical compounds delivered to the cells.

What is meant by controlled burning?

What is the chemical formula for glucose and what do the numbers and letters mean?

What is fuel and why is food referred to as "fuel for the body"?

What form of energy is given off during cellular respiration?

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

Key Paragraph

Cells require a continuous supply of energy to maintain order, build organic molecules, grow, and carry on all their other activities. Because living things can use only chemical energy, the energy for those activities must come from food. As a result of the digestive process described in previous sections, amino acids, single sugars, fatty acids, and glycerol are delivered to your cells. How do your cells obtain energy from the molecules?

EXTEND

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

The Power of Taste

Post this question to students:

"What would it be like if you couldn't taste?" Ask them to write a paragraph on how their life might be different.

12. Close with a short summary.

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

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Supplemental Student Investigation 15.1 Physical and Chemical Digestion

Introduction

How do chemical and physical changes work together in the digestion of food?

Objectives:

- Students should be able to examine data and draw conclusions based on observations.
- Students should be able to observe and take notes during an observation.
- Students should be able to manipulate scientific equipment.

Lesson

This investigation consists of two activities. One is a guided activity, a demonstration, and the other as an independent activity. For the guided activity begin the lesson by asking the question, "How does physical digestion aid in chemical digestion?" After that discussion, begin the demonstration following the procedure below.

Materials for Guided Activity

- 4 baby food jars
- 2 sugar cubes
- water (enough to fill all four jars)
- cooking oil (1 spoonful)
- watch with a second hand
- liquid detergent (1 spoonful)

Procedure for Guided Activity

1. Fill two baby-food jars with water.
2. Drop a whole sugar cube into one jar and a crushed sugar cube into the second jar.
3. Shake both jars. Ask students to predict which jar of sugar will dissolve the quickest. (Synthesis)
4. With the watch, the students are to measure the time it takes the sugar in both jars to dissolve and record the time. Ask students which one dissolved the quickest. (Knowledge) Explain why the crushed sugar dissolved faster. (Synthesis)
5. Fill the other two baby-food jars full of water.
6. Place a tablespoon full of cooking oil in each of the two jars.
7. Add a tablespoon of liquid detergent to one of the jars.
8. Cap both jars.
9. Shake both jars vigorously.
10. Students are to observe any changes in each jar and record their observations. Ask students which jar had the small globules of fat. (Knowledge) Why is it important in the digestion of fat that the globules of fat are decreased in size? (Evaluation)

Explanation

The crushed sugar cube took less time to become soluble because the amount of surface area of a substance either assists or retards the speed of its dissolving. As is true in digestion the greater the surface area allows for the speed of digestion to increase.

With the cooking oil demonstration, students will observe that the detergent causes the oil (fat) to break into smaller globules. This would relate to bile dripping from the gall bladder into the small intestine breaking up fat to increase its surface area so an enzyme can speed up the chemical digestion of the fat.

Assessment for Guided Activity

As an assessment, have the students draw a picture of how each baby-food jar with sugar looked after two hours. Then the students should also draw a picture of each of the baby-food jars with the oil after being shaken. The evaluation of this assessment will simply be if they are able to draw it correctly or not.

Materials for Independent Activity

-unsalted and unsweetened crackers (1 for each student)

Procedure for Independent Activity

1. Distribute one cracker to each student.
2. Each student will chew the cracker for two minutes without swallowing it. Before they begin ask students to predict if any change in flavor will take place. (Synthesis)
3. Students should observe for any change in the taste of the cracker.

Explanation

The crackers consist of starch, a carbohydrate, and will taste very bland in the beginning of the chewing period. While the cracker is being pulverized (physical digestion) into a pulpy mass, the digestive juice (amylase) begins a breakdown (chemical digestion) of the carbohydrates. The enzyme amylase splits the molecules of glucose (sugar). Students will notice a slight sweet taste after a couple minutes.

By chewing their food a little longer, it gets mixed more with our saliva increasing the opportunity of more breakdown of larger starch molecules allowing for easier digestion in the stomach and intestine.

Assessment for Independent Activity

As an assessment give the quiz below.

Quiz

1. How did the cracker taste in the beginning of the chewing period as compared at the end of the period?(Analysis)
2. What was mixed with the cracker in your mouth? (Knowledge)
3. What enzyme in your saliva breaks down the starch molecules? (Knowledge)
4. Classify which was the physical change and which was the chemical change. (Analysis)
5. What were the starch molecules broken down into? (Knowledge)
6. Why do you think it is important to chew food a little longer before swallowing? (Evaluation)

Extension

Students could experiment with different foods to see if tastes would change after chewing for a set period of time. Also the students could do a test by blindfolding and holding a student's eyes and holding a student's nose to see if the sense of smell and taste are related. Let the students try to identify the food.

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Lesson Plan for Week 6, Day 3



Outcomes for Today

Standards Focus: 1ghi 9af

PREPARE

1. Background knowledge necessary for today's reading.

This is essentially a lesson covering the biochemistry of cellular respiration. This is a process which takes place within each individual cell as well as groups of cells. Depend on student (and your own) understanding and prior knowledge of the subject. Carefully evaluate your student population in terms of their background in chemistry. You may choose not to go into too much depth. Simply put, the process is quite complex and a complete understanding of the details outlined in the text is not necessary to gain the concept. The short version is that cellular respiration is a controlled, slow burn allowing energy to be released in the form of heat and mechanical movement for life processes.

2. Vocabulary Word Wall.

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

electron **decompose** **biosynthesis** **anaerobic**
cyanide

- 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.

In order for an organism to live, grow, and function, food must be available to each living cell.

The process of digestion begins with mechanical digestion (such as cutting and chewing food into smaller pieces).

This step is followed by chemical digestion in which the food particles are acted upon by various chemicals, such as hydrochloric acid, within the digestive tract.

Digested food is then absorbed into the blood stream in the small intestine.

The large intestine absorbs water from the left over food products (waste).

4. Read directions for investigation/activity.

5. Read text. Ch 15, The Human Animal: Food and Energy, Text Section 15.8-15.10 pp. 426-429

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

Setting	Characters	Pages
individual cells	ATP molecules	426

RESPOND

6. Fix the facts. Clarify what's 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:

This biochemistry stuff is not easy to understand.

The electron transport system moves electrons in the mitochondria of the cells.

Water is actually formed in this process.

Oxygen is used up in this process.

Carbohydrates, fats, and proteins are all used as sources of proteins.

Biosynthesis is a process used to build and repair cells.

Without oxygen, cellular respiration stops. This is why muscles can slow down and stop if exercise goes on for too long.

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:

"Clothespin Muscles"

Procedure and Activity

This activity can be a fun method for teaching about muscle fatigue. Give each student a clothespin. You will want to use clothespins that have a decent amount of tension when opening. Each student creates a data table displaying five trials and number of times the clothespin was opened.

Demonstrate how to completely open the clothespin. Students must touch the ends of the clothespin together in order to completely open the clothespin.

Assign students partners. One student opens the clothespin and the other student counts the number of times the clothespin was opened.

Instruct one partner to open his or her clothespin as many times as possible in sixty seconds. Repeat this four times. At the end of each trial, the students record how many times they opened their clothespin. When one partner completes all five trials, the partners switch places. Then repeat this process for another five trials for the other partner.

Discussion

Follow-up

Have students graph their individual results. Share all of the students' data on the white board and average each trial. At this point, have students graph the class's data. As a class, discuss the results. You can use this as a simple demonstration of muscle fatigue

Additional Demonstration Activity

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Sugar as a Fuel

Sugar can burn and in this simple demonstration, all you need is some refined granulated sugar and a cigarette lighter. Place the sugar with a little paper for starter on a ceramic plate. Ignite the paper under the sugar with the lighter. (You may need to turn the lighter up to “boost” the ignition process.) The sugar will begin to burn, producing a caramelized mass as the process continues. Explain to students that this represents rapid respiration. Ask students about other conclusions they can draw from the demonstration.

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

Name the molecules that can be used as sources of energy.

Compare and contrast decomposition and synthesis.

Why do muscles become stressed and fatigued?

What two purposes are served by food?

What is cyanide and how does it work?

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

Key Paragraph

The food you had for lunch may serve one of two purposes. First, it can provide usable energy for life functions. Second, the breakdown of the food can provide molecules that are reassembled into larger molecules to build or repair cells in the body. This second process, known as biosynthesis, depends on the presence of appropriate building materials. These include the carbon skeletons formed in the Krebs cycle as well as various elements and vitamins that must be obtained in the diet.

EXTEND

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

Write Your Own Lyrics

Here are the lyrics from the rock theme song, *Gonna Fly Now*
By Artist: Detta Little and Nelson Pigford Lyrics

Trying hard now
it's so hard now
trying hard now

Getting strong now
won't be long now
getting strong now

Gonna fly now
flying high now
gonna fly, fly, fly...t

Have students write a short verse with their own lyrics having to do with muscles and the chemistry of cellular respiration.

12. Close with a short summary.

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

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Lesson Plan for Week 6, Day 4



Outcomes for Today

Standards Focus: 1ghi 9af

PREPARE

1. Background knowledge necessary for today's reading.

When we hear the word "diet," several things come to mind. Is it diet the verb, or diet the noun? The news media have been very busy these days with news about the human diet. Take a little introductory time to assess student perceptions of the current state of the American diet and associated health-related issues. You may want to make a list of student comments and perceptions known as "knowledge vignettes" and post them. Refer to these as you proceed with the lesson.

2. Vocabulary Word Wall.

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

fiber **processed** **cholesterol** **saturated fat**
malnourished

- 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.

Humans need food made available to individual cells in order to survive and thrive.

The mechanical and chemical process of making food available to all parts of the human body is known as digestion.

The stages are as follows:

- mechanical digestion
- chemical digestion
- transport in the blood stream
- cellular respiration

Cellular respiration provides the cell with materials for energy and synthesis is the process of building or repair of the components of the cell.

4. Read directions for investigation/activity.

5. Read text. Ch15, The Human Animal: Food and Energy, Text Section 15.11-15.13 pp. 429-436

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

Setting	Characters	Pages
United States	overweight individuals	429
typical school lunch	junk food	430-
the heart of many		431
Americans	cholesterol deposits	435

RESPOND

6. Fix the facts. Clarify what's 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:

Lipids are fats.

There are different food pyramids for different cultures.

Most Americans, as a general rule, have a poor diet.

Fats aren't necessarily bad, just too much of them are.

Fatty deposits can build up inside the blood vessels.

Pieces of fat can then break off and block small arteries. This can cause a heart attack.

Fruits and vegetables provide us with energy and vitamins.

Refined sugar is referred to as "empty calories."

Roughage such as fruits and grains is good for our large intestine.

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:

Super Size Me: The Movie

Description

In this movie, Morgan Spurlock ate nothing but food from McDonald's for 30 days - breakfast, lunch and dinner. He was thoroughly tested by doctors before he started his "diet" and periodically tested throughout the 30 days. By the end of his experiment, the changes in his blood chemistry and the stress on his organs approximated the liver failure seen in advanced alcoholics, his cholesterol had risen to dangerous levels, and he had gained 24.5 lbs.

The fast food industry spends three billion dollars a year trying to influence children. It lures them from a young age with special meals, toys, clowns, birthday parties, and playgrounds. The focus on children continues through the teenage years with trendy commercials, celebrity endorsements, and other advertising.

Super Size Me and the information presented in this lesson plan from <http://www.teachwithmovies.com> are small but helpful antidotes to advertising. They are an ideal way to present nutrition curriculum dealing with the dangers of convenience food and the effects of advertising.

Procedure

It is recommended that you subscribe to "Teach With Movies." This is a website with excellent lesson plans and related material available for use with movies of value to the curriculum. The fee is nominal and there are many good science-related movies available.

Discussion

Follow the directions in the lesson plan for the next two-three days.

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 Give examples of each (Number 1-4)

- | | | |
|-------------|-----|---|
| 1. Proteins | ___ | Important for chemical reactions in cells |
| 2. Vitamins | ___ | Provided primarily by fruits and vegetables |
| 3. Fiber | ___ | Supply the body with building materials and enzymes |
| 4. Lipids | ___ | Provide for concentrated energy |

How has human diet changed in the last 50 years?

What are three types of fats and give examples of each.

What are "empty calories" and why the name?

How did scientific researchers come to the conclusion that fiber in the human diet was healthy?

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

Key Paragraph

In 1988, the first *Surgeon General's Report on Nutrition and Health* singled out saturated fat as the number one dietary problem in the United States. Five of the 10 leading causes of death in the United States (cardiovascular disease, certain types of cancer, stroke, diabetes mellitus, and arteriosclerosis) are diseases in which diet plays a role. According to the report, less fat and more fiber in the diet should reduce the risk of contracting many of these conditions.

EXTEND

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

A Note From Your Body

Set the stage by telling them that their body is going to speak to them in a dream about their diet. Have them write about their dream in which the honest message comes through to them.

12. Close with a short summary.

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

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Lesson Plan for Week 6, Day 5



Outcomes for Today

Standards Focus: 1ghi 9af

PREPARE

1. Background knowledge necessary for today's reading.

This is a very important and timely lesson for young adolescents. There are two very different concepts covered here. In the first part, the importance of proteins is addressed, while in the second part, eating disorders are addressed. The disorders can be summed up in one word and that is image! Spend some time talking about this from a non-judgmental perspective. Anorexia and bulimia are primarily adolescent female disorders, but society bears responsibility. How do the media contribute to this situation? Bring in a few supermarket checkout tabloids to answer this question.

2. Vocabulary Word Wall.

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

protein **amino acid** **legume** **anorexia nervosa** **bulimia**

- 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 process of converting food into fuel for the body begins with mechanical digestion.

Chemical digestion and circulation by the blood makes the food available to the cells.

In the cells, respiration converts the food into building materials and energy, Proper nutrition is important for health.

Many health-related conditions are due simply to poor nutrition.

4. Read directions for investigation/activity.

5. Read text. Ch15, The Human Animal: Food and Energy, Text Section 15.14-15.15 and Investigation 15.2, pp. 436-439 & 443-449

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

Setting	Characters	Pages
a food plate rich in fiber	banana, apple, nuts, grains, fruits	435
a food plate rich in protein	cheese, nuts, meat, shrimp, cheese, chicken, milk	436

RESPOND

6. Fix the facts. Clarify what's 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:

Protein is necessary for the repair and maintenance of the human body.

Legumes are a type of green plant.

Just eating protein-rich food does not necessarily build muscle. This protein can be converted to fat if there is little exercise.

Dieting in one form or another is very common in this culture.

Anorexia is where a people starve themselves. It is because of image.

Bulimia is where a person eats a bunch of food (often junk food) and then forces vomiting. This too is a often a self-esteem issue.

Both bulimia and anorexia are disorders found mostly in teenage females.

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 Up to *Super Size Me*, Day Two

Continue with the movie and related lesson plans from the previous lesson. Here is an additional activity/resource:

A Natural Foods Diet Cures Teenagers' Behavior Problems

Introduction

Read this summary of a natural food program found in several schools.

Clinicians have been screaming about the effect of food on behavior and attention for the past 30 years. Long ago, Feingold and Conners (of the Conners Attention Rating Scales) encouraged parents to delete the sugar, refined flour, and artificial chemicals from kids' diets. The value of this program was dramatically demonstrated at a small school for problem teens in Appleton, Wisconsin. The Appleton Central Alternative High School was established in 1996 for troubled kids who could not attend traditional high school because of discipline problems. Things were so bad at Appleton that a police officer was stationed full time at the school to prevent violence and weapons violations.

Then the owners of Healthy Ovens Bakery donated \$100,000 over five years to build a kitchen and hire a staff to provide a natural foods breakfast and lunch at the school, and everything changed. After the food program was initiated, the principal observed that students were calm, well-behaved, more receptive to learning, and happier. The school had no dropouts, no expulsions, no drug or weapons incidence, and no suicides in the three years since the program started.

What was the plan that achieved these drastic results? Soda, candy, chips, and chemically-processed food items are absolutely prohibited in the school building. Meals provide an array of fresh produce, whole grains, and oven-baked entrees. Breakfast consists of an energy drink (made daily with fresh whole fruit, juices and a flax-based powder), whole grain bread, bagels, and muffins (with no chemical preservatives); granola; fresh peanut butter; whole fresh fruit, and milk. For lunch students have access to a fresh salad bar with dark green lettuce and hot entrees that may include an oven-baked chicken patty with broccoli almandine rice; turkey in gravy with oven-mashed potatoes and corn; or BBQ meatballs made from ground turkey with baked potato wedges.

Appleton, Wisconsin Healthy Foods Program: "Impact of Fresh, Healthy Foods on Learning and Behavior," 2002, A video of the program is available from Natural Ovens at www.naturalovens.com,

Here is a news link on a school that uses natural foods. Note that there have been marked behavioral changes since the implementation of the program.
<http://abcnews.go.com/GMA/AmericanFamily/story?id=125404&page=1>

Activity

Have students do a little research in this area.

Discussion

Follow up with a comparison to your school's food service system. Perhaps your students could become advocates for change.

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

Why are proteins important for the human body?

What happens if we eat too many proteins?

What are the differences and similarities between anorexia nervosa and bulimia?

What is the root cause of these two disorders?

Why do you think that they occur almost exclusively in females?

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

Key Paragraph

Dieting has become almost epidemic in the United States. In a growing number of cases, dieting becomes an obsession that leads to a potentially fatal eating disorder called anorexia nervosa. A person suffering from anorexia literally starves. Bulimia, another eating disorder, also is increasing in the United States. An individual with bulimia indulges in eating binges, usually involving large quantities of carbohydrate-rich junk food. The individual then induces vomiting or uses laxatives in an effort to purge the body of food and thus not gain weight.

EXTEND

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

Fly on a Mission

Have students write to this prompt:

You are a fly on a reconnaissance mission. Your mission takes you into the school cafeteria during lunch. You are to report back to your commander on your findings. Write a report to the chief fly on your findings but do not be judgmental. In other words, just the facts from the fly!

12. Close with a short summary.

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