

Eating for Your Future

Teacher's Guide

Grade Level: 9–12

Curriculum Focus: Health

Lesson Duration: Three class periods

Program Description

The Inside Tract (23 min.) – Explores how the foods you eat now can help make you healthier or sicker in the long run. *To Your Health* (26 min.) – Investigates which diets provide the best chance for a long and healthy life, and concludes by emphasizing the need for dietary balance, variety, and moderation.

Onscreen Questions

- What role do enzymes play in food digestion?
- Why do members of the Ayvaliotis family need to make changes in their diets?
- What kinds of food are good for the digestive system?
- What kinds of food are bad for the digestive system?

Lesson Plan

Student Objectives

- Become familiar with the latest dietary guidelines from the United States Department of Agriculture (USDA).
- Work in groups to find recipes that will help students meet the dietary guidelines.
- Develop a class cookbook of favorite recipes.

Materials

- *Eating for Your Future* video and VCR, or DVD and DVD player
- Computer with Internet access
- Cookbooks or cooking magazines
- Newsprint and markers

Procedures

1. Begin the lesson by asking students for their ideas about healthful eating. Write their ideas on a sheet of newsprint.

2. Share with the class the latest dietary recommendations from USDA, which can be found at <http://www.hhs.gov/news/press/2005pres/20050112.html>. To help facilitate the discussion, here are some of the key points in the recommendations:
 - Engage in at least 30 minutes of physical activity each day.
 - Eat a variety of foods rich in nutrients from each of the basic food groups while limiting the amount of saturated fats, cholesterol, sugar, and salt consumed. Get less than 10 percent of total calories from saturated fats, and eat fewer than 300 milligrams of cholesterol each day.
 - Eat at least two cups of fruits and two-and-a-half cups of vegetables each day. Try to choose a variety of fruits and vegetables, such as citrus fruits and berries, and dark green and orange vegetables, legumes, and starchy vegetables.
 - Eat at least 3 ounces of whole grains each day.
 - Drink at least 3 cups of low-fat milk each day or eat the equivalent in other dairy products.
3. Tell students that eating healthily should also be fun and interesting. Then explain to them that they will have an opportunity to gain more control over what they eat by working with their classmates to develop a class cookbook.
4. Divide students into groups of three or four. Tell each group to look at recipes either online or in magazines and cookbooks and to find at least five recipes – one for breakfast, one for lunch, and lunch and two for dinner, as well as a recipe for a side dish or dessert. The recipes must be appealing and have healthy ingredients. Students may find the following Web sites a good place to start.
 - <http://www.epicurious.com/>
 - <http://food.cookinglight.com/>
 - <http://www.foodtv.com/>
 - <http://www.exploratorium.edu/cooking/>
5. Give students time in class to look for recipes. If students have not found at least five recipes, they should complete the assignment for homework. Tell students to make sure that they bring to class a hard copy of each recipe.
6. During the next class period, collect the recipes and organize them by meal and/or category into a class cookbook. Make a copy for each student in the class.
7. If students would like, each group can make a cover for the cookbooks. Then go over the recipes and pick out class favorites. Suggest that students prepare at least one recipe for their families or friends.

Assessment

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

- 3 points: Students were highly engaged in class discussions; worked productively in their groups; helped select at least five recipes that included healthful ingredients.
- 2 points: Students participated in class discussions; worked satisfactorily in their groups; helped select at least three recipes that included healthful ingredients.
- 1 point: Students participated minimally in class discussions; had difficulty working in their groups; helped selected only one recipe that included healthful ingredients.

Vocabulary

carbohydrate

Definition: An organic compound found in the form of starch, sugar, or fiber; one of the three basic food types and a major source of dietary energy

Context: While scientists have debated how many carbohydrates should be eaten each day, most agree that they are an important part of a healthy diet.

cholesterol

Definition: A waxy, fat-like substance produced by the liver and found in foods from animal sources; it also is an important chemical found in cell membranes

Context: Our bodies need cholesterol, but too much of this substance can build up on the walls of the arteries, leading to heart disease.

diet

Definition: The types and amount of food eaten each day

Context: Eating a balanced diet means selecting the recommended number of servings of foods from each of the three main food groups – proteins, carbohydrates, and fats – each day.

fat

Definition: High-energy nutrients that contain twice as much energy as an equal amount of carbohydrates; one of the three basic food types

Context: While foods high in fat taste good and can fill you up, they also contain a lot of calories and can lead to significant weight gain.

food

Definition: The fuel that gives the body the energy it needs to perform all needed functions and to stay alive.

Context: Eating a variety of foods is good for your body – and also creates an interesting diet.



protein

Definition: A naturally occurring substance made of amino acids and found in animal products and some plant products; one of the three basic food types

Context: Our bones and teeth need protein, which is found in meats, fish, egg whites, nuts, and grains.

saturated fats

Definition: Fats that are usually solid at room temperature.

Context: Saturated fats, which are found in vegetable shortening and margarine, tend to increase a person's blood cholesterol level.

trans fats

Definition: Created by turning unsaturated fats into saturated by fats through a process called hydrogenation

Context: Trans fats are used in many processed foods because they improve the food's shelf life, but they all raise blood cholesterol levels.

unsaturated fats

Definition: Fats that are usually liquid at room temperature.

Context: Unsaturated fats, such as olive oil and peanut oil, come from plants and tend to decrease a person's blood cholesterol level.

Academic Standards

National Academy of Sciences

The National Academy of Sciences provides guidelines for teaching science in grades K-12 to promote scientific literacy. To view the standards, visit this Web site:

<http://books.nap.edu/html/nses/html/overview.html#content>.

This lesson plan addresses the following national standards:

- Science in Personal and Social Perspectives: Personal and community health

Mid-continent Research for Education and Learning (McREL)

McREL's Content Knowledge: A Compendium of Standards and Benchmarks for K-12 Education addresses 14 content areas. To view the standards and benchmarks, visit

<http://www.mcrel.org/compendium/browse.asp>

This lesson plan addresses the following national standards:

- Health – Understands essential concepts about nutrition and diet
- Health – Knows how to maintain and promote personal health.



Support Materials

Develop custom worksheets, educational puzzles, online quizzes, and more with the free teaching tools offered on the Discoveryschool.com Web site. Create and print support materials, or save them to a Custom Classroom account for future use. To learn more, visit

- <http://school.discovery.com/teachingtools/teachingtools.html>
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DVD Content

This program is available in an interactive DVD format. The following information and activities are specific to the DVD version.

How To Use the DVD

The DVD starting screen has the following options:

Play Video – This plays the video from start to finish. There are no programmed stops, except by using a remote control. With a computer, depending on the particular software player, a pause button is included with the other video controls.

Video Index – Here the video is divided into four parts (see below), indicated by video thumbnail icons. Watching all parts in sequence is similar to watching the video from start to finish. Brief descriptions and total running times are noted for each part. To play a particular segment, press Enter on the remote for TV playback; on a computer, click once to highlight a thumbnail and read the accompanying text description and click again to start the video.

Curriculum Units – These are specially edited video segments pulled from different sections of the video (see below). These nonlinear segments align with key ideas in the unit of instruction. They include onscreen pre- and post-viewing questions, reproduced below in this Teacher's Guide. Total running times for these segments are noted. To play a particular segment, press Enter on the TV remote or click once on the Curriculum Unit title on a computer.

Standards Link – Selecting this option displays a single screen that lists the national academic standards the video addresses.

Teacher Resources – This screen gives the technical support number and Web site address.

Video Index

I. Eating the American Way (The Inside Tract Part 1) (10 min.)

Examine the American obsession with fast food and get some simple tips on how keep your digestive system on track.



II. Digestion and the Human Body (The Inside Tract Part 2) (13 min.)

Take a closer look at a typical American family and their diet while learning about the human digestive system and how to keep it functioning properly.

III. Lean, Mean, Digesting Machines (To Your Health Part 1) (9 min.)

Professional athletes rely on their bodies, and it takes proper nutrition to keep them functioning in peak condition. Learn about eating right from dietitian Leslie Bonci and her clients, the Pittsburgh Steelers.

IV. The Mind and Body Connection (To Your Health Part 2) (17 min.)

There are many different approaches to maintaining a healthy digestive system. Explore some alternative methods such as yoga and the Live Food Diet, and discover the truth about eating fats.

Curriculum Units**1. Fast Food in America**

Pre-viewing question:

Q: What are some good and bad things about fast food?

A: Answers will vary.

Post-viewing question:

Q: What are some tips on good eating?

A: Answers will vary but may include chewing each mouthful at least 20 times, eating without gulping air, and relaxing and sitting down to eat.

2. The Ayvaliotis Family

Pre-viewing question:

Q: What are some foods you like to eat even though you know they aren't good for you?

A: Answers will vary.

Post-viewing question:

Q: What are some digestive system issues you have in common with the Ayvaliotis family?

A: Answers will vary.

3. Carbohydrates, Proteins, and Fats

Pre-viewing question:

Q: Why do you think people overeat?

A: Answers will vary.

Post-viewing question:

Q: How long does it take to digest carbohydrates, proteins, and fats?

A: On average, it should take two hours to digest carbohydrates and between three and four hours to digest high protein foods like beef. Fats take about six hours to break down and be absorbed.



4. The First Stages of Digestion

Pre-viewing question:

Q: What makes you hungry?

A: Answers will vary.

Post-viewing question:

Q: Describe the first stages of digestion.

A: The sight and smell of food gets the salivary glands going before it enters the mouth; our stomachs dilate, and our pancreas starts to secrete the enzymes that will eventually break down the food. Saliva is excreted into the mouth to lubricate and moisturize the food. Once food has been chewed and moisturized, peristalsis – a series of muscle contractions – carries the food down the esophagus to the stomach.

5. The Final Stages of Digestion

Pre-viewing question:

Q: What do you know about the stomach, small intestine, and colon?

A: Answers will vary.

Post-viewing question:

Q: What happens to food in the small intestine?

A: The main part of digestive process takes place in the small intestine. Here, the chyme – partially digested food – comes into contact with bile from the liver and enzymes from the pancreas. These substances combine to break down carbohydrates, fats, and proteins, releasing nutrients to be absorbed by villi – tiny projections on the intestinal wall. Undigested chyme moves into the large intestine, or colon, and is eventually eliminated from the body.

6. Fiber and the American Diet

Pre-viewing question:

Q: What changes could you make to have a healthier diet?

A: Answers will vary.

Post-viewing question:

Q: What are good sources of fiber?

A: Fruit, vegetables, and whole grains are all key providers of fiber. For a healthy digestive system, the American Dietary Association recommends 20–35 grams of fiber a day.

7. The Pittsburgh Steelers' Diets

Pre-viewing question:

Q: What kinds of foods do you like to eat when you are exercising regularly?

A: Answers will vary.

Post-viewing question:

Q: Do you notice a difference in your athletic performance when you eat right?

A: Answers will vary.



8. Protein, Fiber, and Nutrition

Pre-viewing question:

Q: Where do you get most of your fiber from?

A: Answers will vary.

Post-viewing question:

Q: How does a high protein diet affect a person's digestive system?

A: A high protein diet can slow the digestive system down. In order to keep the digestive system working properly, a person eating a high protein diet also needs to eat more fiber. Fiber keeps the bowels regular and lowers the risk of disease.

9. A Balanced Meal

Pre-viewing question:

Q: What does a balanced meal look like to you?

A: Answers will vary.

Post-viewing question:

Q: Describe the kind of daily meal plan that would aid digestion.

A: The number of times a person eats during the day and the size of these meals affect the digestive system. Smaller, more frequent meals aid digestion. On an ideal meal plan, breakfast would be the same size as dinner. Each small meal would consist of the following: something starchy about a fist size, a fruit or vegetable about the size of a fist, and a protein that would equal about the size of the palm of our hand. This equals about 4 ounces of carbohydrates, 4 ounces of dietary fiber, and 3–4 ounces of protein.

10. Yoga and Dietary Supplements

Pre-viewing question:

Q: What dietary supplements do you or someone you know take?

A: Answers will vary.

Post-viewing question:

Q: How does yoga aid digestion?

A: Yoga teaches physical flexibility, which is good for a person's GI tract. But it also teaches mental stillness, which helps a person to relax and feel calm. It is always better to be in a calm, relaxed state when you are eating because it aids digestion and absorption of nutrients.

11. The Live Food Diet

Pre-viewing question:

Q: Do you think raw or cooked foods are more nutritious?

A: Answers will vary.

Post-viewing question:

Q: What types of diets have you tried or thought about trying?

A: Answers will vary.



12. Providing Taste with Nutrition

Pre-viewing question:

Q: What kinds of foods have the most fat?

A: Answers will vary but may include vegetable oils, dairy products such as butter, margarine and cream, and nuts.

Post-viewing question:

Q: How much fat should an average person eat?

A: Total fat consumption should be kept to between 20 and 35 percent of total calories per day, with no more than 10 percent coming from saturated fats, the most harmful kind of fat.

13. What to Eat

Pre-viewing question:

Q: Do you like to try new and varied foods?

A: Answers will vary.

Post-viewing question:

Q: Why are freshly cooked foods better for you than store-bought foods?

A: Freshly cooked foods are healthier than store-bought foods for several reasons. You can control the ingredients used in freshly cooked foods. Also, there are fewer additives and preservatives in freshly cooked foods.

