iScience
Readers

Food and Nutrition:
Eating to Win

by Emily Sohn and Diane Bair

Science Objective

After reading this book, children will think of food in a different way. They will learn that food is energy and that it is important to make good choices about the foods they eat. In addition to learning how to choose healthful foods from the food pyramid, children will learn how their bodies use the nutrients in food. The end result will be a good understanding of how to eat balanced meals that follow guidelines for calories and nutrients.

iScience Puzzle: Fueling Up

Children are presented with four meals and asked to choose the best one to prepare for a runner the night before a marathon. To make the correct choice, children must learn about carbohydrates, proteins, fats, and vitamins. The title of this puzzle tells children right away that food is fuel. We eat for a reason: to give us energy to live and to help us grow.

Objectives ➤ Children will:

- learn guidelines for eating healthful foods.
- understand how the body converts food into energy.
- learn which foods contain carbohydrates, proteins, fats, and vitamins.
- describe how the body breaks down and digests food.

Materials

- nutritional labels from a variety of foods
- pictures or samples of food, including fruits and vegetables

Lesson Plan

Before Reading

Investigation	Science Concepts
Ask: *Why do we eat food?* Explain that food gives us energy and helps us grow. Sensible food choices will help keep us strong and healthy.	Food provides energy and nutrients for growth and development. Nutrition requirements vary with body mass, age, gender, activity, and body functioning.
Ask children to name their favorite foods as you write them on the board. Have them put these foods together to create meals. Ask: *Are these foods good for you? Which meals provide us with the best choices?* As children read this book, refer often to the meals. Circle the food that contains carbohydrates, proteins, fats, and sugars.	Carbohydrates, proteins, fats, and vitamins are components of food. Sugar is a simple carbohydrate. Some foods contain more sugar than others do. Fats have more than twice as many nutritional calories as carbohydrates and proteins. Guides for healthy nutrition tell us how much of these ingredients we should eat each day to stay healthy.
Suggest that children keep track of good foods to eat and write them in a journal as they continue reading.	Guides for healthy nutrition tell us how much of these ingredients we should eat each day to stay healthy.

Explain that children will learn about good nutrition as they read this book. They will understand that some foods contain too much sugar or fat and are bad choices as a source of energy. In addition to learning about the food pyramid, children will learn how the digestive system works to convert food into energy and nutrients that the body's cells can use.

During Reading

Investigation	Science Concepts
pp. 6–7: Write the four meal choices on the board and have children name the main ingredient in each one. Tally the meals they choose as the best option, and ask children to explain their choices. Invite debate about the choices.	Accessing prior knowledge gets students thinking about the topic.
pp. 8–9: Have children look back at the meals from the iScience Puzzle and find which meals contain ingredients from the six food groups. Ask: *Do you want to change your choice based on what the foods contain?*	Guides for healthy nutrition tell us how much of these ingredients we should eat each day to stay healthy.
p. 10: To help visual learners, you may want to draw a graphic illustration of the food chain as described on this page.	Producers and consumers are related in food chains and food webs and may compete with each other for resources in an ecosystem.

During Reading (continued)

Investigation	Science Concepts
p. 12: Draw a seesaw on the board. On one side write the word *calories* and on the other side write the word *exercise*. Ask: *What happens if you eat too many calories but don't exercise enough?*	Calories are a measure of the amount of energy a food contains. Fat has more calories and therefore more energy. Food that is not used as energy is stored in the body as fat.
pp. 14–17: Point out that ingredients are listed on labels from most to least. For example, if water makes up most of the food, it is listed first. Have children examine some labels. Tell them to look for sugar, and salt, which is often a "hidden" ingredient.	Sugar is a complex carbohydrate. Starch is another form of carbohydrate.
pp. 18–19: Ask: *Which keeps you feeling full longer: a bowl of cereal and toast, or bacon and eggs?* Have children form small groups to compare what they eat for breakfast and which lasts longer before they feel hungry again. Have children share their discussions with the class.	Scientists use different kinds of investigations and tools to develop explanations using evidence and knowledge.
p. 21: Point out that when children exercise, they burn fat and build muscle.	The movement of blood throughout the body is part of the circulatory system.
pp. 26–32: Ask: *What happens to food when you put it in your mouth? Where does it go?* Have children create a flowchart showing the different steps in the digestive process. Tell children that this is the first of several systems they will learn about in this book. You may want to have children create one large chart with headings for each system, or have them create individual charts of graphic organizers for the other systems. Make certain that children understand the purpose of each system.	The digestive system breaks down food so that it can be used by the body. The circulatory system carries nutrients in the blood to all parts of the body. Waste is eliminated through the excretory system. The respiratory system brings oxygen into the lungs and blood and eliminates carbon dioxide.
p. 34: Have children begin a chart of the circulatory system. Restate the purpose of the circulatory system. Refer back to the pictures of a clogged artery on page 21. Ask: *Why is it important to keep arteries clear? What effect does the food we eat have on our arteries?*	The heart is a muscle that pumps blood throughout the body. Arteries carry blood from the heart and veins carry blood back to the heart.
p. 36: Refer back to the seesaw you drew to illustrate the information on page 12. Review what children have learned about calories and exercise.	Some activities use up more energy, or calories, than others.
p. 42: Have children summarize what they have learned as they explain which meal in the iScience Puzzle a runner should eat.	Carbohydrates take longer to break down than proteins or fats.
p. 44: Have children complete the Beyond the Puzzle activity. Encourage children to share their food journals with the class.	Nutrition requirements vary with body mass, age, gender, activity, and body functioning.

After Reading

Restate the key ideas in the book. For example, food is fuel for the body. The body needs carbohydrates, proteins, and fats, as well as foods that are high in vitamins and minerals. Different systems in the body play a role in bringing nutrients throughout the body. The digestive system breaks food down; the circulatory system carries nutrients in the blood; the excretory system eliminates wastes; the respiratory system obtains oxygen and eliminates carbon dioxide. Encourage children to relate what they learned to personal experience.

Investigation	**Understanding Science**
Ask: *Have your ideas about food changed now that you have learned why we eat and how our bodies use food?*	Food provides energy and nutrients for growth and development.
Revisit the favorite foods that children named before they began reading. Ask: *Do you think that your favorite foods contain the nutrients your bodies need?* Have them compare their favorite foods to the food pyramid. Ask: *Which food groups are you eating? Are you eating too much from one category and not enough from another?*	The food pyramid is a nutritional guideline that suggests how much of each food group (carbohydrates, vegetables, fruits, fats, dairy, proteins) people should eat each day.