Lesson Two
Nutrients and the Body

Objectives

After participating in this lesson, students will
- Be able to identify key nutrients the body needs and describe their function and importance.
- Understand that bodies are affected by the types of nutrients taken in through food and drink.

Time

50 minutes                  Prep Time: 10 minutes

Activities

2.1 Review and Plan for the Day  3 minutes
2.2 Introduction to Nutrients   10 minutes
2.3 Nutrient Groups/Presentations  27 minutes
2.4 Closure—True/False Game     10 minutes

Key Terms

- Nutrients
- Carbohydrates
- Proteins
- Fats
- Vitamins
- Minerals
- Water

Materials

- Poster of human body
- Food Model cards
- Nutrition Template (Activity Sheet 2.3) for each of the 6 Nutrients
- Nutrition Template (Transparency 2.3)
- Nutrients (Information Sheets 2.3 a-f)
- True or False Nutrient Statements (Information Sheet 2.4)
- Scrap paper
- Optional: Job cards for small groups
Teacher Preparation

- Order or create Food Model cards.
- Write Plan for the Day and Objectives on chart paper or board.
- Draw an outline of a human body on chart paper.
- Make copies of Nutrients (Information Sheets 2.3 a-f), 2 copies of each.
- Make 6 copies of Nutrition Template (Activity Sheet 2.3), 1 per group.
- Make transparency of Nutrition Template (Transparency 2.3).
- Make 1 copy of True or False Nutrient Statements (Information Sheet 2.4).

2.1 Review and Plan for the Day

Materials: Plan for the Day and Objectives

Write the Plan for the Day and Objectives on the board before class, listing all of the activities students will be doing.

Plan for the Day:
- Introduction to Nutrients
- Nutrient Groups/Presentations
- Closure—True/False Game

Review the previous class by asking students to name a component of health and how they have addressed it in the past few days.

Explain that today’s focus will be learning about nutrients. They will be working in groups and making presentations on a specific nutrient. Then they will participate in a game that will test their knowledge about the nutrients.

Review the Objectives with students.

2.2 Introduction to Nutrients

Materials: Chart paper and markers, poster of human body, Food Model cards

Explain that in this lesson students will be learning some basic nutritional information for making healthy food choices. Begin by providing some information about the importance of nutrients (substances that provide nourishment for the body’s growth or metabolism) in the diet.

- Explain that the body is just like a car. Cars need fuel to run, and so do our bodies. Food is the fuel our bodies use to function. Demonstrate this point by showing the drawing of a body and explaining that this is our fuel tank. Hand out a few Food Model cards to students and have them each select two foods that they eat or like.
Have them to tape the cards to the body poster. Bring students’ attention to the body, which is now full of food. Ask them to notice that it’s full of different kinds of foods.

- Explain that it’s important to consume different types of fuel. Note that, while our bodies can utilize many kinds of fuel, they are affected over time by the type of fuel, or food, that we take in. So it’s important to know what types of “fuel” we’re putting into our bodies. Explain that the most basic element of “fuel” is the nutrient.

- Tell the students that there are six basic Nutrients:
  - Carbohydrates (nutrient that gives us high amounts of quick energy)
  - Fats (nutrient that gives us stored energy)
  - Proteins (nutrient that builds muscle and bones)
  - Vitamins (nutrient that helps regulate body processes)
  - Minerals (nutrient essential to growth and metabolism)
  - Water (essential for digestion, respiration, carrying nutrients and oxygen)

Explain that all of these nutrients are needed to maintain a healthy body.

- Write the six nutrients on chart paper or the board.

- Explain that students will be working in groups to learn more about the individual nutrients by answering some specific questions.

### 2.3 Nutrient Groups/Presentations  27 minutes

**Materials:** Nutrition Template (Activity Sheet 2.3), Nutrition Template (Transparency 2.3), Nutrients (Information Sheets 2.3 a-f), pencils

Explain that each group will get a Nutrients information sheet. They will then answer the following questions and record their answers on the Nutrition Template (Activity Sheet 2.3). *(Note: The Nutrients information sheets were designed for basic-level readers. Students with more advanced reading skills can find the information in a health textbook or books on nutrients from the library.)*

Display the Nutrition Template transparency for students to see the following questions:

1. What does this nutrient do for your body? (“The Good News”)
2. What happens to your body if you get too much or too little of the nutrient? (“The Bad News”)
3. What foods do you enjoy that are good sources of this nutrient? (“Come and Get It”)
4. Why is it important for you to eat the right amount of the nutrient? (“Bottom Line”)

Once you have explained what each group will be doing:

- Form 6 groups.

- Give a different Nutrients information sheet—2 copies—to each group.
• Jobs can be assigned, if you have groups of 4 or more. Have job cards to give to each student in the group: Reader (reads the information provided), Writer (writes the responses to questions), Presenter (presents the information), Facilitator (keeps the group on task) and Timekeeper (keeps track of allotted time).

• Allow time for each group to read and discuss the information sheet. As they are reading, they should look for the answers to the questions and make note of the answers on the Nutrition Template activity sheet.

• Tell groups to come up with a statement for each of the four questions on the activity sheet and to be prepared to complete a 2-minute presentation based on their notes. The presentations will be done after every group has completed the activity sheet.

Have each group present the information they learned about their nutrient. Have the Nutrition Template transparency available to use as a reference.

• Before groups present, review presentation skills:
  ° Speak clearly and loudly.
  ° Face the class.
  ° Make eye contact with classmates around the room.
  ° The class shows support by listening to what the presenters are saying.

• Have groups volunteer for their turn and make their presentations.

2.4 Closure—True/False Game  10 minutes

Materials: True or False Nutrient Statements (Information Sheet 2.4), scrap paper, pencils

Explain that you are going to read some statements about nutrients and students have to decide whether the statement is true or false.

Have the entire class stand in a line on one side of the room. Give each student a piece of scrap paper and a pencil. Tell them that you are going to read a statement and they have to write down whether they think the statement is “True” or “False.”

Read one of the statements and have students write their answer down on the piece of scrap paper. Give the correct answer to the statement. If students got it right, have them take a step forward, if not, they stay where they are. Continue with the rest of the statements and see how many steps forward students come.

Resources

Food Models: For General Audiences (200 models on 54 cards)
National Dairy Council 1-800-426-8271
Product code 0012N
# Nutrition Template

**Nutrient**

<table>
<thead>
<tr>
<th>The Good News</th>
<th>The Bad News</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Come and Get It</th>
<th>Bottom Line</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Making sure I eat the right amount of ____________________________ is important to me because…</td>
</tr>
</tbody>
</table>

Nutrition and Physical Activity for Lifelong Health

ETR Associates

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# Nutrition Template

**Nutrient**

<table>
<thead>
<tr>
<th>The Good News</th>
<th>The Bad News</th>
</tr>
</thead>
<tbody>
<tr>
<td>(What does this nutrient do for YOUR body?)</td>
<td>(What happens to YOUR body if you get too much or too little of the nutrient?)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Come and Get It</th>
<th>Bottom Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>(What foods do you enjoy that are good sources of this nutrient?)</td>
<td>(Why is it important for you to eat the right amount of this nutrient?)</td>
</tr>
</tbody>
</table>

Making sure I eat the right amount of _______________________ is important to me because…
Carbohydrates

Carbohydrates are the major part of most human diets.

There are 2 types of carbohydrates.

- **Complex carbohydrates**
  - Include *starches* and some forms of *fiber*.
  - About 50% of your diet should come from *complex* carbohydrates.
  - Examples of foods containing complex carbohydrates include pasta, wheat, corn, vegetables, fruit, beans and grains.

- **Simple carbohydrates**
  - Include *sugars* such as glucose, fructose and sucrose.
  - Limit how many *simple carbohydrates you eat* because they don’t add many vitamins or minerals to your diet and they have lots of calories that contribute to weight gain.
  - Examples of foods containing simple carbohydrates include candy, soft drinks, cake and cookies.

What do carbohydrates do for your body?

- Carbohydrates provide the body’s most important source of energy.
- Carbohydrates are high-quality fuels because it takes little effort to release their energy.
- Foods with complex carbohydrates also provide the body with fiber. A diet low in fiber may contribute to colon cancer.

What if you have too little or too many carbohydrates?

- A diet low in carbohydrates can result in the body having too little energy. Low energy levels can make you tired and less alert mentally.
- Eating too many simple carbohydrates can result in obesity. Carbohydrates are turned to energy, as the body needs it. Excess carbohydrates are stored as fat.
Proteins

**What do proteins do for your body?**

- Proteins are made up of **amino acids** that the body uses to **make skin, muscle and bone**.
- The body requires **20 amino acids** for good health.
  - Of these, **11 can be produced within the body itself**.
  - The remaining **9 are called essential amino acids**, because it’s essential to include them in your diet.
  - The **body can’t store amino acids**, so it’s important to eat some protein almost daily.

**How can you get protein in your diet?**

- Examples of foods with protein include **meat, chicken, fish, eggs, dried beans and nuts**.
- Food that supplies all 9 essential amino acids is called a **complete protein**.
- Almost all proteins from animal sources are **complete**, while plant protein sources are often incomplete.
- People who don’t eat animal protein can **combine sources of plant proteins** to be sure they get the essential amino acids. For example, beans and rice, a common meal throughout the world, form a **complete** protein when eaten together.

**What if you have too little or too much protein?**

- Most Americans eat more protein than the body needs.
- Only about **10-15% of your calories** should come from proteins.
- *If you don’t get enough* proteins from the food you eat it may cause **insufficient development of bones and muscles**, and **problems related to skin tone**.
- There is no evidence that eating excessive amounts of protein will build more or stronger muscles. In fact, *eating large amounts* of protein **may contribute to weight gain** because many foods high in protein are also high in fats, which can increase risk of hypertension, high cholesterol, heart disease and diabetes.
Fats are compounds that include solid fats and oils.

What do fats do for your body?

+ Fats are essential:
  - For healthy skin and hair.
  - For normal growth and nerve function.
  - For the production of certain hormones.
  - To allow the body to absorb certain vitamins during digestion.

Fat can be burned as energy when the body doesn't have enough carbohydrates stored, but the level of the energy produced from fat is lower than that produced from carbohydrates.

+ The body needs a certain amount of fat to:
  - Insulate against cold.
  - Provide energy for muscles.
  - Provide a layer of padding between skin and muscles.
  - Protect internal organs.

What foods have fat?

+ A trace of fat is found in almost all foods.
+ Examples of foods with fats include meat, fish, dairy products, nuts and chocolate.
+ Many foods, such as potatoes, have little or no fat naturally, but become high in fat when cooked in oil - e.g. french fries and hash browns.

What if you have too little or too much fat in your diet?

+ Too much fat can contribute to many health problems including obesity, heart disease, diabetes and hypertension.
+ Only 20-30% of your calories should come from fats.
+ Some fats are healthier than others. Avoid “transfats,” and eat fats like olive oil and canola oil.
Minerals

Minerals play a vital role in nutritional health

Common minerals include calcium, sodium, potassium, iron, iodine and zinc.

- Minerals are found in almost all foods.
- Vegetables, fruits and grain products are particularly good sources.
- A balanced diet with a variety of foods can help prevent mineral deficiency problems.

What do minerals do for your body?

- Minerals are important for growth and maintenance of body structures.
- Minerals help regulate metabolism.

What if you get too little or too many minerals?

Having too few minerals can affect all body systems including the skeletal, cardiovascular, respiratory and reproductive systems.

- The effects on the body are very specific and directly related to the type of mineral missing from the diet. For example:
  - Iron deficiency anemia, a condition fairly common in teenage girls, results in a decrease in the number of red blood cells.
  - Not getting enough calcium restricts the proper development of bones and results in brittle bones later in life.

Too many minerals in your diet may be harmful.

- For example, if you drink a lot of carbonated sodas, the high level of phosphates actually interferes with calcium metabolism and may weaken your bones.
Vitamins

What do vitamins do for your body?

- Vitamins help the body produce energy.
- Vitamins are compounds that help regulate body processes such as:
  - Digestion
  - Growth
  - Metabolism
  - Hormone development
  - Wound healing
  - Nerve function

How can you get the vitamins you need?

- Vitamins are found in all food groups.
- Common sources of vitamins are fruits and vegetables.
  - Green leafy and yellow vegetables are especially good sources of vitamins A and B.
  - Oranges, grapefruit, lemons, limes, and green chilies are excellent sources of vitamin C.
  - The body makes vitamin D through exposure to sunlight.

What if you don’t get enough vitamins?

- Vitamin deficiencies can cause a wide range of health problems including several diseases rarely seen in the U.S. These include:
  - scurvy (caused by not enough vitamin C)
  - beriberi (caused by lack of vitamin B)
  - rickets (caused by lack of vitamin D)

- Vitamin deficiency in this country primarily cause:
  - Poor regulation of internal body processes.
  - The body not being able to produce high levels of energy.
Some experts believe that large amounts of water may dilute and wash water-soluble vitamins from the body.

Use water-soluble vitamins.

Carry oxygen in the blood.

Regulate body temperature.

Nearly all foods contain water.

Some are up to 90% water.

Beverages, fruit and vegetables are major sources of water.

The body loses about 1 quart of water each day. To replace body fluids, experts recommend drinking 8 or more glasses of water daily, instead of drinking soda, coffee, juice or other beverages.

What does water do for your body?

Water is an essential nutrient that makes up 50-75% of your body weight. Water is so important that your body can’t live for more than a few days without it.

- Water assists in digestion and respiration.
- Water helps carry nutrients and oxygen throughout the body.

What if you have too little or too much water?

Not drinking enough water can compromise all of the body’s systems.

Water allows the body to:
- Use water-soluble vitamins.
- Carry oxygen in the blood.
- Regulate body temperature.

When water deficiency is severe, the body systems shut down and death occurs.

Most people do not drink enough water and drinking too much water causes few problems.

- Some experts believe that large amounts of water may dilute and wash water-soluble vitamins from the body.
True or False Nutrient Statements

• Carbohydrates provide the most important source of energy to your body.  
  True

• 40% of your diet should come from fats.  
  False, only 20 to 30% of your diet should come from fat.

• Vitamins are found in only certain food groups.  
  False, vitamins are found in all food groups. Common sources are fruits and vegetables.

• Minerals are important for growth and maintenance of body structures.  
  True

• Water helps your body regulate its temperature.  
  True

• You can live without water for more than a few days.  
  False, your body cannot go without water for more than a few days.

• Our bodies need some fat to function effectively.  
  True

• You want to include a lot of simple carbohydrates in your diet.  
  False, you don’t want to eat a lot of simple carbohydrates, such as soft drinks, cake and cookies, because those foods do not supply your body with many vitamins or minerals and have lots of calories that contribute to weight gain.

• Most Americans eat more protein than the body needs.  
  True

• You can only get protein from animal sources (beef, chicken and fish).  
  False, people who don’t eat animal protein can combine sources of plant proteins to be sure they get the essential amino acids. For example, beans and rice form a complete protein when eaten together.