

# HEALTHY FOOD, HEALTHY MIND, HEALTHY BODY



## LESSON 2: NOURISHING THE MIND

### OVERVIEW

Students will learn about how various macronutrients (carbohydrates, protein, and fat) and micronutrients (vitamins and minerals) contribute to mental health, cognition, and emotional wellness.

### TIME

One to two 45-minute classes

### OBJECTIVES

In this lesson, students will:

- Identify macronutrients and micronutrients;
- Describe four wellness categories that can help them achieve balance (Immunity, Calm, Energy, Digestive Health);
- Describe the direct and indirect mental and physical effects of macronutrients and micronutrients; and
- Identify foods that contribute to mental and physical wellness.

### STANDARDS

#### NGSS

MS-LS1-7. Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.

#### CASEL FRAMEWORK

**SELF-AWARENESS:** The abilities to understand one's own emotions, thoughts, and values and how they influence behavior across contexts. This includes capacities to recognize one's strengths and limitations with a well-grounded sense of confidence and purpose. Such as:

- Identifying one's emotions
- Experiencing self-efficacy
- Having a growth mindset
- Developing interests and a sense of purpose

### MATERIALS

In addition to common classroom materials and an Internet connection, students will need:

- [National Dairy Council Food Models Printout](#) (PDF, 88MB)
- Nutrition Mapping handout

### PREPARATION

1. Arrange the classroom to accommodate multiple groups of 4 students.
2. Prepare the handouts.

### KEY TERMS

- **Macronutrient:** a type of nutrient found in food (e.g., carbohydrates, protein, and fat) that provides energy (calories) to fuel the body. They're needed in large amounts.
- **Micronutrient:** a vitamin or mineral (such as vitamin C or calcium) that is essential to health. They're needed in small amounts and do not provide energy (calories).
- **Immune System:** the body's defense system that protects you from infections and disease.
- **Digestion:** the process by which food is broken down into nutrients.
- **Gut:** the different body parts of the digestion system (gastrointestinal tract).
- **Cognition:** the mental process of understanding through thought, experience, and senses.
- **Neurotransmitters:** the body's chemical messengers that help the brain communicate with the rest of the body.



## INTRODUCTION

Tell students that they will be learning more about how nutrition can contribute to mental health. Then, show them this video [this video](#) about the relationship between food and mood.

As a refresher, ask students to recall any macronutrients (carbohydrates, protein, and fats) and micronutrients (vitamins and minerals) they are familiar with. Then, have them reflect on the video and consider ways in which nutrients may affect their physical wellness.

## LESSON PROCEDURE

### Step 1

Explain that in order to achieve a balance in physical and mental health, there are many nutrient-rich foods they can eat. Having a nutrient-rich diet can contribute both to your mental and physical health and wellness.

### Step 2

Explain to students that you will focus on four wellness categories that directly or indirectly contribute to your mental wellness. By focusing on nutrient-rich foods that contribute to each of these areas, you can improve or maintain your mental health. These broad categories are:

- Immunity
- Calm
- Energy
- Digestion

### Step 3

Describe how nutrients influence your health in each of the wellness categories:

- **Immunity:** nutrients that keep your body ready to fight infection
- **Calm:** nutrients that help your body to respond effectively to stress
- **Energy:** nutrients that help you to sustain energy throughout the day
- **Digestive Health:** nutrients that support gut health

### Step 4

Ask if they know of any macronutrients or micronutrients that support immunity. Explain that the following nutrients all play an important role in the function, regulation, and response of immune cells throughout our body.

Then discuss how the following nutrients can support a healthy immune system.

- **Protein** plays a crucial role in antibody production. Protein is found in meat, chicken, dairy, nuts and beans.
- **Fiber** helps to improve gut health. Fiber is found in fruits, vegetables, and beans.
- **Vitamin A** helps to protect against infections by keeping skin and tissues in the mouth, stomach, intestines, and respiratory system healthy. Vitamin A is found in dairy, fish, and fortified cereals.
- **Vitamin C** helps to form antibodies. Vitamin C is found in fruits and vegetables.
- **Vitamin D** helps to regulate antimicrobial proteins that can directly kill pathogens. Vitamin D is found in fish and fortified milk and dairy.
- **Zinc** helps heal wounds and supports an immune response. Zinc is found in whole grains, beans, nuts, and meats.
- **Selenium** supports your immune system. Selenium is found in whole grains, dairy, fish, and meat.

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- **Probiotics** support your microbiome. Probiotics are found in yogurt and fermented foods.

Now, ask the students to consider ways in which immunity directly or indirectly affects mental health.

Answers may include:

- When you are healthy, you may be in a better mood.
- It is difficult to concentrate when you are feeling sick.
- Worrying about getting sick can have an emotional toll.

## Step 5

Ask students if they know of any macronutrients or micronutrients that contribute to a feeling of calm and increase your focus.

Then discuss how the following nutrients support and regulate brain cells and emotion.

- **Omega-3 fatty acids** are known to build brain and nerve cells and are important for learning and memory. Omega-3 fatty acids are found in fish.
- **Antioxidants** such as vitamin A, vitamin E, vitamin C, and beta-carotene can help reduce inflammation and improve thinking and memory. These are found in fruits, vegetables, and dairy.
- **Vitamin D** is important in the regulation of emotions and behavior. Vitamin D is found in fish and fortified milk and dairy.
- **Fiber and probiotics** support gut health which has been tied to mental health. Fiber is found in fruits, vegetables, and beans while probiotics are found in dairy and fermented foods.

Now, ask the students to consider ways in which reducing stress and improving mental clarity directly or indirectly affects mental health. Answers may include:

- Improved cognition and focus can help to improve your engagement with the world.

- A better memory helps you to feel more relaxed and less confused.

## Step 6

Ask students if they know of any macronutrients or micronutrients that support energy. These nutrients support energy production and fuel our body to feel energized throughout the day.

Then discuss how the following nutrients help you to sustain energy.

- **Carbohydrates** are the main source of energy in the human diet. Carbohydrates are found in fruits, vegetables, grains, and sweets.
- **Proteins** may not directly provide energy, but it can help fuel us to have lasting energy. Protein is found in meat, dairy, fish, beans, nuts, and poultry.
- **Vitamin B12** helps to transform the food you eat into energy that your cells can use. Vitamin B12 is found in fish, meat, poultry, eggs, and dairy products.
- **Iron** helps to carry oxygen from your lungs to the rest of your body. Iron is found in meat, fish, beans, fortified cereals, and vegetables.

Now, ask the students to consider ways in which sustaining energy directly or indirectly affects mental health. Answers may include:

- When you have more energy, you can accomplish more and have a positive outlook.
- When you're well-fueled, you avoid feeling sluggish and unmotivated.

## Step 7

Ask students to identify macronutrients and micronutrients that support digestive health. The following nutrients support our digestive health by promoting

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regularity (pooping) as well as feeding and supplying healthy gut bacteria.

Then discuss how the following nutrients **support digestion**.

- **Fiber** aids in elimination (pooping!) and also feeds “good bacteria” in your gut. Fiber is found in fruits, vegetables, and beans.
- **Fermented foods** like yogurt, kefir, and kimchi have healthy bacteria that keeps our gut healthy

Now, ask the students to consider ways in which supporting digestive health directly or indirectly affects mental health. Answers may include:

- Gut bacteria produce neurotransmitters that affect mood.
- Being constipated can make you cranky.

## Step 8

Arrange students into groups of 4. Randomly assign each group one of the **Immunity, Calm, Energy, and Digestive Health** categories. Then, have students reference the [National Dairy Council Food Models Printout](#) (PDF, 88MB) (and the [USDA FoodData Central Database](#) if the information cannot be found on the cards) and collaborate to identify specific foods that are high in the nutrients listed in their assigned category.

## REFLECTION

Have students create a recipe for a smoothie (or a sMOODthie!) that will boost their moods by including their favorite ingredients that support immunity, promote calm, sustain energy, or help digestion.

## ASSESSMENT

Have students complete the Nutrient Mapping activity. Using the attached sheet, they will list macronutrients and micronutrients that contribute to wellness in each of the four categories (Immunity, Calm, Energy, Digestive Health).

## EXTENSIONS

- To learn more about the complex process of digestion, have students explore the [Digestive System Gizmo](#).