

The Ultimate Guide: Human Body

Grade Level: 9-12

Subject: Human Body

Duration: One or two class periods

Objectives

Students will

- discuss the function of each system in the body;
- consider how the systems work together; and
- apply their knowledge by writing a description.

Materials

- Paper and pencils
- Newsprint and markers
- Computer with Internet access
- *The Ultimate Guide: Human Body* video and VCR

Procedures

1. Begin the lesson by asking students what they know about the human body. Ask them to consider the questions below. If students are unsure of the answers, tell them they will learn about them during this lesson.
 - How many systems are in the human body?
 - What does each system do?
 - Is there any connection among the systems in the body?
2. Show students segments from the program *The Ultimate Guide: Human Body*. The first segment “Human Body Works” illustrates the skeletal system, the relationship between bones and soft organs, and the relationship between bones and muscles.
3. Briefly discuss the video segment, highlighting connections among body systems. Point out that our muscles send signals to the brain, which then sends a message about how to move. The skeletal system protects key organs; the skull protects the brain, and the rib cage protects the heart.
4. Tell students that their task is to describe the connections among the body systems in several different situations. They may work individually or in pairs.
5. The situations are below. Share this hint: *Consider how the skeletal, muscular, nervous, circulatory, and respiratory systems work together.*
 - What happens in the body when a teammate kicks the ball to you during a soccer game and you dribble it across the field and make a goal? Think about how many body systems are involved.
 - What happens in the body when you come home from school, smell cookies baking, run to the kitchen to see if they’re done, and take one? You eat the whole cookie and drink a glass of milk. How many body systems are involved? What role does each play?

- What happens in the body when you're studying for a math test? You're reading the problems, writing the answers, getting up to stretch, and talking to a friend on the phone. How are the body systems working together to complete these tasks?
 - What happens in the body when you're sleeping? Which systems are working?
6. Direct students to classroom print resources and the following Web sites:
- http://www.stcms.si.edu/hbs/hbs_student.htm
<http://sln.fi.edu/biosci/systems/systems.html>
<http://www4.tpgi.com.au/users/amcgann/body/skeletal.html>
 (focus is the skeletal system)
<http://yucky.kids.discovery.com/noflash/body/pg000126.html>
 (focus is the digestive system)
<http://www.worldinvisible.com/apologet/humbody/body.htm>
<http://web.jjay.cuny.edu/~acarpi/NSC/14-anatomy.htm>
7. Give students time in class to work on the activity. Make sure they write how the body systems are connected in each situation. Students may include drawings showing these connections.
8. If time permits, ask students to share their ideas. How many body systems are involved in most of the activities? What does that tell students about the human body?
9. Conclude the lesson by reviewing students' ideas at the beginning of the lesson. What have they learned about the relationships among different systems in the body?

Evaluation

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

- **Three points:** Students participated actively in class discussions; demonstrated a solid understanding of how body systems work; and clearly described how they are connected.
- **Two points:** Students participated in class discussions; demonstrated an understanding of how body systems work; and described how they are connected.
- **One point:** Students did not participate in class discussions; demonstrated no understanding how of body systems work; and did not describe how they are connected.

Vocabulary

circulatory system

Definition: the system of blood, blood vessels, lymph vessels, and heart concerned with the circulation of the blood and lymph

Context: The heart is central to the human circulatory system; it pushes blood through the body's network of arteries and veins.

muscular system

Definition: the 600 muscles in the body, both voluntary and involuntary

Context: The heart muscle is unique in the human muscular system because it is made of smooth and skeletal muscle and is involuntary.

nervous system

Definition: the brain, spinal cord, and network of nerves that receive messages from inside and outside the body and transmits instructions about how to respond

Context: The nervous system is the control center of the body; it interprets the senses and enables you to respond.

respiratory system

Definition: the system that allows breathing; includes the nose, pharynx, trachea, and lungs

Context: The function of the respiratory system is breathing in oxygen from the air and expelling carbon dioxide

skeletal system

Definition: the bones (206 in an adult) that give the body support and protect vital organs.

Context: Without a skeletal system, the human body would be limp and floppy.

Academic Standards

The National Academy of Sciences provides guidelines for teaching science and a coherent vision of what it means to be scientifically literate for students in grades K–12. 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:

- Life Science: Interdependence of organisms; behavior of organisms
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Credit

Marilyn Fenichel, education writer and editor