



5th Grade Body Systems Unit Human Body Systems Overview

The Body Systems unit is taught using two modules: Insights *Bones and Skeletons* and Insights *Human Body Systems*. The modules provide opportunities for students to investigate the relationship between structure and function in living organisms as well as the interconnected nature of the body systems.

In the *Human Body Systems* module, students investigate how the body gets the things that it needs for life. Initially, students make observations of their own bodies and discuss what they know. This previous knowledge is then built upon as the students are introduced to their bodies as a “working machine.” Through this module, the circulatory, digestive and respiratory systems are studied. Once students have an understanding of each system, they then investigate the interconnectedness of the systems. This is achieved through the processes of creating models, observation of their own bodies, and experiments. (*Insights: Human Body Systems* page I-2)

Essential Questions:

***Human Body Systems* Module**

1. How do the digestive and circulatory systems work together to get nutrients (food) to the cells?
2. How do the respiratory and circulatory systems work together to get oxygen to the cells?

Unit Questions:

***Human Body Systems* Module**

1. What does the circulatory system do? How does it work?
2. What does the digestive system do? How does it work?
3. What is the smallest structure that carries on the functions (circulation, digestion and respiration) of life?
3. How is food turned into substances that can be used by the cell?
4. How do cells throughout the body get oxygen needed for life?
5. What does the respiratory system do? How does it work?

Lesson Summary

***Human Body Systems* Module**

Learning Experience 1 (What Does Your Body Do?): Students begin this module by observing some of the ways their bodies work to complete a variety of tasks. Using these observations as a basis for discussion, students share what they already know about the needs of their bodies and how their complex bodies are.

Learning Experience 2 (What Do I Already Know? The Me I Can See . . . The Me I Can't See): During this lesson, students investigate the things they can see their bodies do as

well as things they cannot see their bodies do. To help students investigate things that they cannot see their bodies do, they are introduced to stethoscopes. These will be used throughout the module.

Learning Experience 3 (What Are Cells?): Students are introduced to the idea that their bodies are like machines, with all parts working together to take in food, process food to get usable fuel for energy, and get rid of wastes. They learn that the smallest part of this machine that carries on these processes is the cell. The cell is the smallest structure of life. Through a slide presentation, students are able to observe several examples of cells found in the human body.

Learning Experience 4 (Blood and the Heart): In this learning experience, students are introduced to the idea that supplies needed by the body, and thus the cells are carried throughout the body by the blood. They are also introduced to the structure of the heart and how this allows the heart to pump blood throughout the body. To better investigate the structure of the heart, students observe a sheep's heart.

Learning Experience 5 (The Transportation System): Students begin exploring how individual systems work to meet the needs of the body by focusing on the circulatory system. They investigate how the structures of the circulatory system have different jobs but that they are all required to carry out the functions of the system. To better understand this, the students compare the structure of veins and arteries, explore how valves function in the veins, and examine the importance of the circulatory system as a closed system.

Learning Experience 6 (Food and Fuel: The Digestive System): Students are introduced to the role of the digestive system in processing food for the body. Starting at the mouth, students follow the path of food through the wavelike muscular contractions of peristalsis and into the digestive organs until food is broken down enough for the blood to carry.

Learning Experience 7 (What Happens in the Digestive System?): Students explore the processes of mechanical and chemical digestion as food moves through the digestive tract. They also investigate the role of enzymes in chemical digestion.

Learning Experience 8 (How Does Food Get Out?): Students explore how the process of diffusion allows for food that has been digested to get into the blood. They also investigate the role of the semi-permeable membrane in determining what gets in the blood and what doesn't. Students begin to connect the digestive system to the circulatory system and the role of the circulatory system in moving food to all parts of the body.

Learning Experience 9 (Breathing: Getting Air into the Body): Students are introduced to the respiratory system and its organs by using a model of the trachea, lungs, and diaphragm. They compare breathing rates and lung capacity and graph data as a method for visualizing and sharing information.

Learning Experience 10 (Getting the Most Out of Your Air and Food: Surface Area): In this learning experience, students explore a crucial characteristic of organs in both the

digestive and respiratory systems – surface area. They learn that diffusion not only plays a role in digestion but also in providing oxygen. The students are faced with a challenge that illustrates the importance of maximum surface in the villi in the small intestine and the alveoli in the lungs.

Learning Experience 11 (What Goes In Must Come Out: Tying It All Together): This learning experience focuses students' ideas on how circulatory, digestive and respiratory systems work together. As they work their way through the body systems, the class creates a schematic illustration of the interactions of the body systems.