

5.4 How do we meet our Energy Needs?

Story Extension for This Lesson:

The digestive system is often one of the more familiar body systems for students, so it is a good starting place for research. The teacher can model the research process in this activity, and later in the unit when students will independently research a body system. For explorers of the Hudson's Bay Company, nutritional challenges in the North, particularly in winter, were a real hazard. In this activity, the class will research how the digestive system works, and this will be followed up by research about current nutritional guidelines compared to the traditional Inuit diet that John Rae followed.

Grade: 5

Strand: Human Organ Systems

Big Ideas:

- Organ structures are linked to their functions. (Overall expectations 2 and 3)
- Systems in the human body work together to meet our basic needs. (Overall expectations 2 and 3)
- Choices we make affect our organ systems and, in turn, our overall health. (Overall expectations 1 and 3)

Overall Expectations:

2. investigate the structure and function of the major organs of various human body systems
3. demonstrate an understanding of the structure and function of human body systems and interactions within and between systems

Specific Expectations:

2.4 use appropriate science and technology vocabulary, including circulation, respiration, digestion, organs, and nutrients, in oral and written communication

2.5 use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes (e.g., create labelled charts or graphs to show changes in heart rate and breathing as a result of exercising)

Inquiry Skills :

Questioning, Gathering Data, Reporting

Instructions:

Part 1:

On chart paper or an IWB, have students share what they think they know about the digestive system and the questions they have.

Inquiry Starter:

Do the following demonstration with students without telling them what each beaker represents. Prepare the solutions in advance.

- Fill one beaker with vinegar. This will simulate acidic stomach acid.
- Fill the other beaker with water, two tablespoons of baking soda, and a pinch of salt. This will simulate the fluids found in the small intestine (bile in the small intestine tends to be basic, as opposed to the acidic fluids found in the stomach).
- Put both aspirin into the "stomach" beaker, and observe. The uncoated aspirin should dissolve quite quickly. The coated aspirin will not dissolve completely.
- With a spoon, carefully transfer the coated aspirin from the "stomach" beaker to the "intestine" beaker. Observe what happens.
- Ask students what they observed, and why they think it happened. Encourage them to make further observations (e.g. smell the two beakers).
- Explain that one of the aspirins was uncoated, so it dissolves quickly in stomach acid, while the coated aspirin does not dissolve until reaching the small intestine. From this, can students infer which beaker represents the stomach, and which is the small intestine?

Part 2:

The digestive system is a key system for human health, and the food choices we make can have both short and long term effects on our health. Using research skills that have been used in language, social studies, or other subjects, guide the students through the research process for the digestive system:

- What are the major organs of the digestive system?
- What is the function of each of the organs?
- How do the organs work together to aid our bodies in extracting nutrients from food, and evacuating waste?

As an end product of their research, you may wish to have students complete a large, labelled diagram on 11 x 17 paper (see attachment for sample diagram of digestive system). Alternately, a Prezi or other online product could also be produced. There are numerous online resources to gather information regarding the digestive system:

- Resource: <http://kidshealth.org/en/kids/digestive-system.html>

- Resource: <http://www.sciencekids.co.nz/sciencefacts/humanbody/digestivesystem.html>
- Resource: <http://www.ngkids.co.uk/science-and-nature/digestive-system>

Part 3:

Once research is completed, have students write a journal entry in their science journal/notebook.

- List three new things you learned about the digestive system.
- What are two facts that surprised you?
- What is one question you still have about digestion or topics related to the digestive system?

Materials List:

- two aspirin—one coated and one uncoated
- two beakers
- vinegar
- baking soda
- water
- salt

Connections:

Language: Reading, Writing, Research Skills

Subject Area:

Health

Connects to:

Grade 5

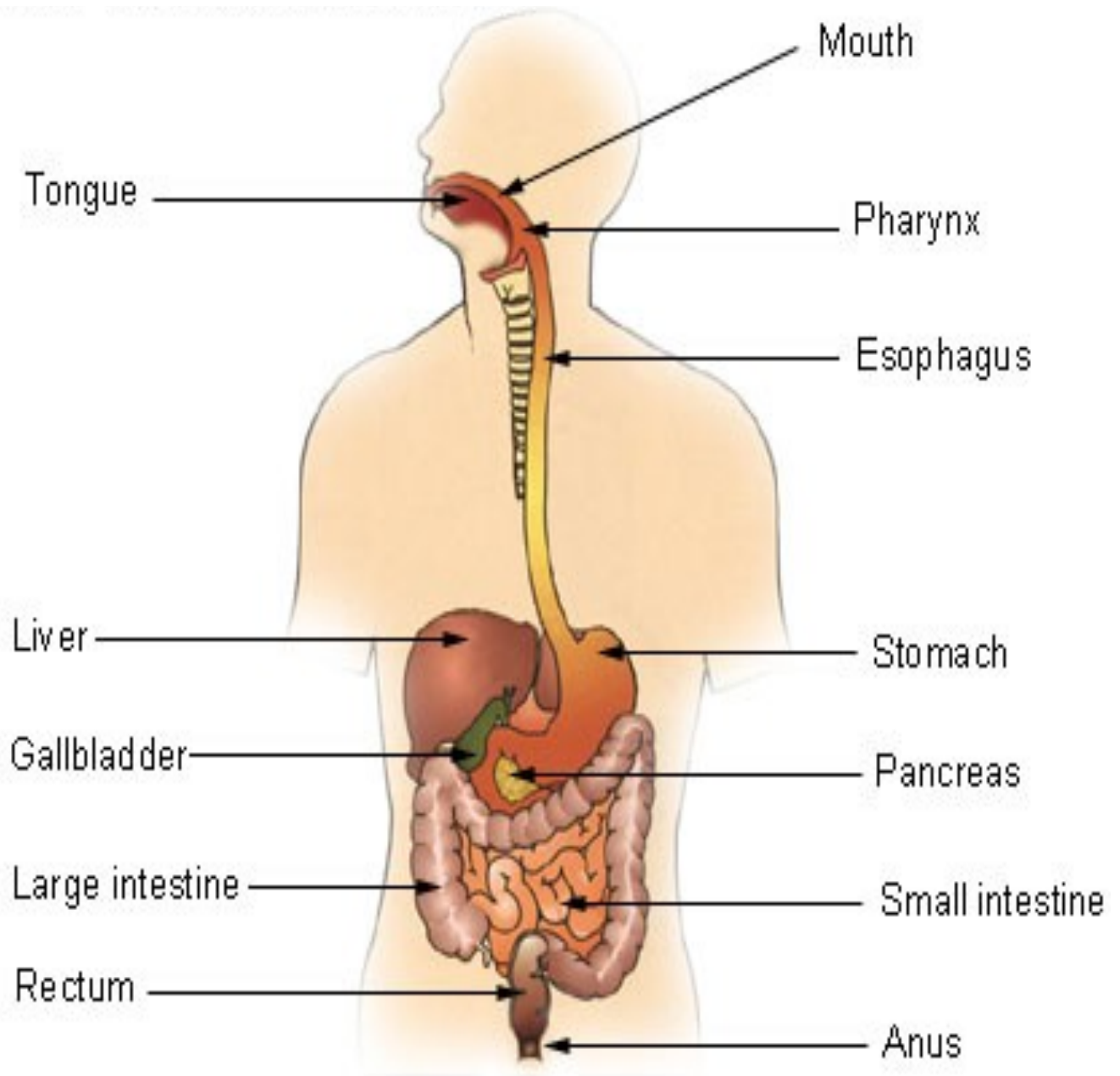
Assessment Strategy:

The journal entry may serve as an assessment strategy for this activity. Alternately, students can be asked to do a mind map of the digestive system or concept map of the digestive system, outlining the main organs of the digestive system and their function.

Handouts/Assessments:

- Digestive System

Organs of the Digestive



System