WOW Lab
Science Education R&D

Quebec - Achievements and Competencies

Learning Outcomes

Cycle 2 (Gr. 9-10)
Digestive system

The Quebec Achievements and Competencies are based on the Progression of Learning Outcomes derived from the Quebec Education Plan set by the Ministere de l'Education, du Loisir et du Sport.

Specific Expectations

GENERAL EDUCATION PATH

CYCLE 2 (Gr. 9-10) — Secondary 3

LIVING WORLD

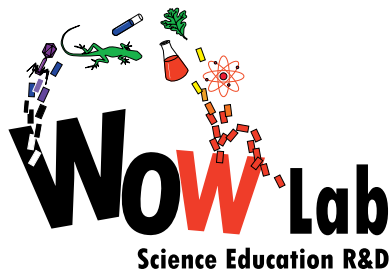D. Systems
  1. Digestive system
    a. Digestive tract
      i) Names the main parts of the digestive tract (mouth, esophagus, stomach, small intestine, large intestine, anus)
      ii) Explains the role of the digestive tract (decomposition of food, absorption of nutrients and water, elimination of waste)
      iii) Describes the functions of the main organs that make up the digestive tract (mouth, stomach, small intestine, large intestine)

The Glovely Digestion Model demonstrates the process of digestion in the human body, and shows the organs that work together to make it happen. Students will discuss the parts of the digestive tract, such as the mouth, esophagus, stomach, and intestines.

    b. Digestive glands
      i) Names the main digestive glands (salivary glands, gastric glands, pancreas, liver, intestinal glands)
      ii) Describes the function of the main digestive glands (e.g. secretion of saliva, gastric enzymes, digestive juices, bile)

Students can discuss the glands involved in the digestive system, such as the salivary glands, pancreas, liver, and intestinal glands. Students will describe the function of these glands in the human digestion process.

 e. Transformation of food
  i) Describes the two types of transformations of food that take place in the digestive system (mechanical, chemical)
  ii) Associates the organs in the digestive tract with the type of transformation they perform (e.g. mechanical action of teeth, chemical action of glands)

In this activity, students will discover that food can be chemically or mechanically transformed during the digestive process. They should be able to identify where each transformation of food happens during the demonstration. Students will associate the glands and organs used for both chemical and mechanical digestion, providing examples and describing how they work.

APPLIED GENERAL EDUCATION PATH

CYCLE 2 (Gr. 9-10) — Secondary 3

LIVING WORLD

C. Systems
  1. Digestive system
    a. Digestive tract
      i) Names the main parts of the digestive tract (mouth, esophagus, stomach, small intestine, large intestine, anus)
      ii) Explains the role of the digestive tract (decomposition of food, absorption of nutrients and water, elimination of waste)
      iii) Describes the functions of the main organs that make up the digestive tract (mouth, stomach, small intestine, large intestine)
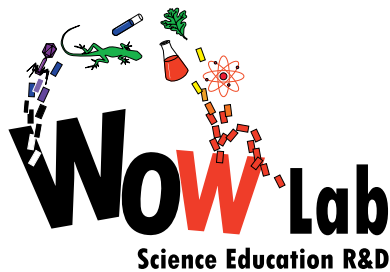
The Glovely Digestion Model demonstrates the process of digestion in the human body, and shows the organs that work together to make it happen. Students will discuss the parts of the digestive tract, such as the mouth, esophagus, stomach, and intestines.

    b. Digestive glands
      i) Names the main digestive glands (salivary glands, gastric glands, pancreas, liver, intestinal glands)
      ii) Describes the function of the main digestive glands (e.g. secretion of saliva, gastric enzymes, digestive juices, bile)

Students will examine the digestive glands involved in the digestive system, such as the salivary glands, pancreas, liver, and intestinal glands. Students will describe the function of these glands for human digestion.

    e. Transformation of food
      i) Describes the two types of transformations of food that take place in the digestive system (mechanical, chemical)
      ii) Associates the organs in the digestive tract with the type of transformation they perform (e.g. mechanical action of teeth, chemical action of glands)

In this activity, students will discover that food can be chemically or mechanically transformed during the digestive process. They should be able to identify where each transformation of food happens during the demonstration. Students will associate the glands and organs used for both chemical and mechanical digestion, providing examples and describing how they work.

Strategies

A. EXPLORATION STRATEGIES

2. Distinguishing between the different types of information useful for solving the problem
3. Referring to similar problems that have already been solved
4. Becoming aware of his or her previous representations
6. Formulating questions
7. Putting forward hypotheses (e.g. individually, in teams, as a class)
8. Exploring various ways of solving the problem
9. Anticipating the results of his or her approach
11. Taking into account the constraints involved in solving a problem or making an object (e.g. specifications, available resources, time allotted)
13. Using different types of reasoning (e.g. induction, deduction, inference, comparison, classification)
16. Collecting as much scientific, technological and contextual information as possible to define a problem or predict patterns
18. Developing various scenarios

B. INSTRUMENTATION STRATEGIES

3. Using technical design to illustrate a solution (e.g. diagrams, sketches, technical drawings)
4. Using different tools for recording information (e.g. diagrams, notes, graphs, procedures, logbook)
5. Using a variety of observational techniques and tools

C. ANALYTICAL STRATEGIES

1. Identifying the constraints and important elements related to the problem-solving situation
3. Using different types of reasoning (e.g. inductive and deductive reasoning, comparison, classification, prioritization) in order to process information
4. Reasoning by analogy in order to process information and adapt scientific and technological knowledge

D. COMMUNICATION STRATEGIES

1. Using different means of communication to propose explanations or solutions (e.g. oral presentation, written presentation, procedure)
3. Exchanging information
4. Comparing different possible explanations for or solutions to a problem in order to asses their relevance (e.g. full-group discussion)
5. Using tools to display information in various formats (e.g. data tables, graphs, diagrams)