

## **Lesson 1: Snake Digestive System**

### **An Elementary Science Lesson Plan Designed For Group Inquiry Based On The 5E Inquiry Model**

**GRADE LEVEL:** This lesson was designed for a 5<sup>th</sup> grade class.

**SCIENCE CONCEPT:** This lesson is intended to have students use their knowledge and understanding of the digestive system in humans and apply those concepts to the digestive system in snakes.

#### **RELATIONSHIP TO CALIFORNIA SCIENCE CONTENT STANDARDS:**

2. c Students know the sequential steps of digestion and the roles of teeth and the mouth, esophagus, stomach, small intestine, large intestine, and colon in the function of the digestive system.

#### **LEARNING OBJECTIVE:**

1. Students will illustrate and describe the organs of the digestive system in snakes and their placements.

#### **EVALUATION IDEAS:**

1. formative: Students make the organs of the digestive system in a snake with play dough or clay.
2. summative: Students draw their predictions and the actual appearance of the organs in snakes.

**CONCEPTUAL BACKGROUND:** For humans to eat, they must first chew their food into smaller parts. After the food has been chewed into small enough parts, it is swallowed and travels down the esophagus into the stomach. The digestive process is started to a minor extent in the mouth and continues in the stomach, where food is tossed and turned, being mixed with stomach acid.

The food then continues down into the small intestine, the longest part in the digestive system, where digestion is completed and nutrients are absorbed into the bloodstream. After, the remaining indigestible wastes travel through the large intestine where they are processed and turned into feces. The colon moves the waste and reabsorbs salts and water through its lining into the bloodstream.

Snakes, on the other hand, swallow their food whole with digestion starting almost immediately as a result of strong enzymes contained in snake saliva. The saliva covers the food and more enzymes are secreted when the food reaches the stomach. The speed with which digestion takes place is dependent on the temperature and surface area of their food. If the digestion process stops altogether, the snake most likely will regurgitate what it was eating.

**LESSON IMPLEMENTATION PLAN:** This lesson is designed to be an individual, inquiry level 1 activity. Students will confirm the sequence of digestion and the appearance of the digestive organs in snakes.

**ENGAGE-** I will show students which organs are in human digestive system, what they look like, and the sequence of steps that take place when food is digested. Students will look at the human torso model from SERC or another life-size representation of the digestive system. Once they have studied how the organs look and the order of sequence, there will be a class discussion on what they think the digestive system looks like in snakes.

**EXPLORE-** Each student will be given around two cups of play dough and a paper cut-out. It will be explained the paper cut-out represents a snake but is not an actual outline of a real snake. With the play dough, students will make the organs of the digestive system to fit into their paper snake. They will draw where and what the organs look like in the snake on the prediction section of their worksheet and explain their reasoning in writing in the reason section.

**EXPLAIN-** Once students have gotten started, I will walk around checking on student progress and to clarify any questions on the procedure. After students have finished with their predictions, I will explain how animals have similar or different digestive systems compared to us, humans.

**ELABORATE-** To elaborate on learning the same concepts in different contexts, I will provide examples of other animals with similar digestive organs compared to humans.

**EVALUTE-**

1. formative: Students make the organs of the digestive system in a snake with play dough or clay.
2. summative: Students draw their predictions and the actual appearance of the organs in snakes.

**DIFFERENTIATION PLANS:**

Behaviors for Student A

If a student consistently does the opposite of what is told, I will make sure they are not sitting near students that could easily go off-task. Throughout the lesson, I will constantly check-in with the students to make sure they are following directions and on task.

Cognitive for Student B

If a student needs extra-time, I will have them illustrate their prediction and orally explain their reasoning for their prediction. For the section on the actual appearance of the organs in snakes, they will write the reason why their prediction differed or agreed with the actual arrangement.

Cognitive for Student C

If a student finishes early, I will give them an extension task. They will use the play dough to make other organs they think snakes have to put on their paper snake.

#### Affective for Student D

If a student does not appear to want to participate, I will have them draw out the organs on the paper snake instead of using the play dough.

#### Language Demands for Students E, F, G

If a student has no English skills, I will provide them with a worksheet having directions and key concept terms in their native language.

If a student has some English skills but was not advanced, I will have many of the directions and key concept terms in their native language and English. Their worksheet will also contain sentence frames such as the following:

- “I think the stomach will be \_\_\_\_\_.”
- “My predictions were \_\_\_\_\_ to the actual.”

If a student has advanced English skills, some of the key concept terms will be in their native language and in English on their worksheet. Their worksheet will include sentence frames. The following are some examples:

- “I think the snake will have a small \_\_\_\_\_ because \_\_\_\_\_.”
- “My predictions were the \_\_\_\_\_ as the actual because \_\_\_\_\_.”

#### **LIST OF MATERIALS (PER STUDENT):**

1. Human torso (SERC has one available for check out)
2. Play dough (around 2 cups)
3. Paper snake (a piece of paper with dimensions of 12 in x 1 in)
4. Worksheet
5. Pencils

#### **Accompanying Worksheets and Image**

1. My Predictions
2. The Actual
3. Internal Organs of a Snake

#### **References**

Mattison, C. (2007). *The New Encyclopedia of SNAKES*. Princeton: Princeton University Press.

Roberts, A. (2010). *The Complete Human Body: The definitive Visual Guide*. London: DK.