

## Class: Biology 112

### Lesson Title: The Digestive System – Digesting Fish

Class Size: 23  
Time: 60 mins

#### Curriculum Outcomes:

(116-7, 317-1) Describe the structures, purpose and functioning of the digestive system.

#### Learning Objective(s):

1. To assist students in understanding the structures of the digestive system, including tracing the pathway of food.

#### Materials:

- Coloured sticky notes
- Picture of a fish
- Computer and Projector
- Blue and Brown t-shirt
- String
- Bristol board
- Digital Simulation: <http://kitses.com/animation/swfs/digestion.swf>

#### Preparation beforehand:

- Make sure you have enough room to perform this activity. If you have a large class size, you could try to scale the digestive system. For example, the structure of the small intestine would involve many students as it is very long compared to the large intestine.

#### Introduction:

1. Begin by assessing student's previous knowledge on the digestive system, with focus on the main structures and what happens to the food in our body when we eat. Give students a brief overview of the role of the digestive system.
2. Explain what a kinulation is (broken up into kinesthetic and simulation). Tell them that these are used to help students learn difficult concepts that are otherwise difficult to picture. It allows students to become part of the demonstration, and therefore easier to learn. Ask students if they would like to try one.

#### Activity:

1. Assign students the following roles: (1) piece of food, (2) mouth, (4) stomach, (1) sphincter, (4) duodenum, (6) small intestine, (4) large intestine, (1) anus. Once students receive their role, guide students in the order which they will stand.
2. Tell each structure (group of students) the role they will play while a piece of food enters the digestive system. Each group of students will stand face-to-face to another. Starting with the group acting as a mouth and finishing with the student acting as the anus.
3. A student will act as a piece of food, enter the mouth and make its journey through the structure of the digestive system.
4. Roles of the structures as followed:
  - a. Mouth: Students will demonstrate "alligator hands" and chew the food. At this point the food will be given a blue t-shirt to represent saliva with a variety of sticky notes attached. Sticky notes will represent fat and protein particles.
  - b. Stomach: These students will rip the sticky notes in half, this represents the particles being broken down further from enzymes. Students will also rock the piece of food from side to side.
  - c. Duodenum: Students will rip sticky notes again as the food is even further broken down, in particular the fat molecules due to bile secretion.
  - d. A student will serve as a sphincter and open the passage for the food from the stomach to the small intestine
  - e. Small intestine: Students will demonstrate "Jazz hands" to represent villi. At this time students will remove sticky notes from the piece of food. This represents protein particles being absorbed.
  - f. Large intestine: Students will link arms and step in and out as the food moves through the intestine.

This will represent peristalsis.

g. Anus: The student will create an opening and allow the food to pass through.

5. Perform the kinulation a second time and allow students to complete the actions of the structure as well as explain their role in food break down.
6. Finished by showing students a Digital Simulation of the role of the digestive system. This will allow students to see the process they just demonstrated

**Conclusion – Possible wrap-up questions:**

1. What would happen if part of the digestive system failed?
2. What do you think would happen if no nutrients were absorbed in the intestines? No water? Too much water?
3. What is the role of enzymes and bile in the digestive system?