**The Digestive System Lesson Plan:**

Lesson Structure:

1. Introduction to digestion (10 min)
2. Length of digestive tract (5 min to 10 min)
3. Modeling the digestive system (20 to 30 min)
4. Clean-up and post-assessment (10 min)

Learning goals:

1. Students should be able to explain why digestion is crucial for human health
2. Students should be able to identify the composition of the digestive tract
3. Students should be able to trace the path that food takes during digestion

Introduction

1. Motivation
   1. What did you eat today?
   2. Why do we need to eat food?
   3. What happened to your food after you ate it?
      1. Should lead students to think about stomach and digestive system
2. Show and explain the parts of the digestive system
3. How does the energy from food get into the body?
   1. Nutrients flow into the bloodstream from the small intestine
4. What happens to the indigestible parts of the food?
   1. Leftovers go into the large intestine and are eliminated
5. Introduce each part of the digestive system and have students guess what each part does

**Activity 1: Length of the Digestive System**

* 1. Materials:
     1. Strand of yarn
     2. 6 clothespins
     3. 3 groups, 12 students total
  2. Instructions:
     1. Let students guess how long the entire digestive system is
        1. Have a student volunteer from each group come up and hold the yarn to guess how long they think it is
     2. Unravel the strings and assign each group the task of figuring out where each part starts and begins
        1. Mouth = 3 inches
        2. Esophagus = 10 inches
        3. Stomach = 6 inches
        4. Small intestine = 15 feet
        5. Large intestine = 4 feet

**Activity 2: Digestive System Simulation**

1. This can become messy and probably cause some giggles
2. Materials:
   1. 2 plastic bags
   2. Food! (crackers, bread, banana)
   3. Shot glass amount of OJ + water
   4. Wide mouth funnel (you can just cut out the bottom of a cup)
   5. Panty hose leg
   6. Shallow basin (paper plate)
   7. 4 paper cups (1 for funnel, 1 for “rectum”, 1 as a pusher, and 1 as a “toilet”)
   8. Paper towels
   9. Gloves
3. Instructions:
   1. **Mouth:** Place the graham crackers (3 crackers), bread (½ slice), and banana (1 banana) into one baggie and mash it up with fingers.
      1. *Explain to the students that they are modelling the mouth aka mechanical digestion and the action of our teeth*
   2. **Saliva:** Add the water and continue mashing
      1. *Explain to the students that the water is like the saliva that breaks down our food and makes it soft enough for our tongues to push it down our throat and into the esophagus)*
      2. **Note: squeeze out air!!!**
   3. **Esophagus and Stomach:** Use scissors to cut one of the bottom corners of the bad and squeeze the contents into the second bag. Add the OJ. Begin squeezing the bag again.
      1. *Explain the OJ acts as acid in our stomach and our stomach muscles contract and break down the food even further like we did when squeezing the bag. Explain the strength of the acid and how it could erode our stomach. Explain that our stomach lining is replaced every three days.*
   4. **Small Intestine:** Take the stomach bag and cut one of the bottom corners of the bad. Holding the pantyhose over the “bloodstream” (plate), allow students to squeeze the contents of the bag into the pantyhose.
      1. *Explain that the liquid leaking out of the pantyhose is like the nutrients that leak out into our bloodstream through the small intestine. This is how we get our nutrients from food!*
      2. Try to get as much of the liquid out as possible so squeeze if needed.
   5. **Large intestine:** Using paper towels, roll the pantyhose and food in paper towels, squeezing and patting along the way
      1. *Explain that our body absorbs all the remaining water from our food as it moves through the large intestine. This helps us to remain hydrated since our body is made up of 70% water*
   6. **Rectum:** Cut the bottom of the pantyhose and squeeze contents into the “rectum” (cup with hole). Show the students the end product. It should look like waste (aka poop). You can choose to explain that the waste will remain in the rectum until we excrete it. Then go ahead and exrete by pushing through hole with second cup.
   7. Remember to get your waste into the toilet and clean up well!

**Activity 2: The Esophagus - Peristalsis**

* 1. What would happen if you ate food upside down?
  2. Peristalsis is the movement of food through the digestive system.
  3. Recall the part of the previous activity which demonstrated the esophagus (pouring through the funnel). Ask students if they think that the food just slides through our bodies? - No. Our muscles do this work for us to push the food down our esophagus. (*Recall involuntary and voluntary muscles - esophagus muscles are involuntary*)
  4. Materials:
     1. Plastic easter eggs
     2. Panty hose leg
  5. Instructions:
     1. Demonstrate the action of our muscles by letting students squeeze easter egg through the panty hose leg. Our fingers act as the muscles.
     2. Students can eat the candy and place their hands at the base of their throat to feel this muscle action

Supplies needed:

* Butcher paper
* Mason jars + food coloring (red)
* Labels for each step
* Graham crackers (food coloring, chocolate, regular)
  1. <https://www.youtube.com/watch?v=Rd9vQLTnPpk>
  2. 22:50 is where digestion clip starts
  3. Or could do this: <https://www.youtube.com/watch?v=VwrsL-lCZYo>
  4. Or this: <https://www.youtube.com/watch?v=ZBZWgrfZFbU&t=117s>

Resources

<https://www.youtube.com/watch?v=7av19YhNkhE>

<https://www.youtube.com/watch?v=Zl1TnOfphqE>

<https://www.youtube.com/watch?v=VwrsL-lCZYo>

<https://www.youtube.com/watch?v=ZBZWgrfZFbU&t=117s>