

# Bay Area Scientists in Schools Presentation Plan

**Lesson Name** A Field Trip Through The Digestive System!

**Presenter(s)** Ashmi Patel (Partner: Jisella Jimenez)

**Grade Level** 5<sup>th</sup>

**Standards Connection(s)** Animal Internal Processes: Steps and processes of the digestive system

**Teaser:** This presentation will help students learn the order of the digestive system from start to finish. They will start at the mouth and work their way down to the rectum. They will learn the location of each digestive organ in the body while understanding the significance of its function and its role in helping our body absorb food. In the first activity, students will watch a video, “The Magic School Bus”, which explores the digestive system from the mouth to the large intestine. In the second activity, students will “build the digestive system” by placing cutout organs and parts made of construction paper in order while writing key functions of each part on the individual cutouts. This will help them remember the new vocabulary. The main objective of this lesson is to introduce students to the digestive system from a physiological perspective and introduce them to the digestive pathway in further detail.

## **Objective:**

1. Students will learn the functions of the digestive system.
2. They will learn the pathway of the digestive tract.
3. They will learn that food is physically and chemically broken down into smaller pieces so it can be absorbed by the body.

## **Vocabulary/Definitions:**

- **Mouth-** Contains teeth, which break down food into smaller pieces and allows food to be swallowed
- **Salivary Glands-** Secrete saliva, which breaks down carbohydrates and helps food move down the throat
- **Tongue-** Muscular organ that prepares food to be swallowed and also contains taste buds (sensory-sweet, sour, salty, and bitter)
- **Esophagus-** Tube that allows food to pass into the stomach
- **Stomach-** Muscular pouch that stores food and where food is mixed with gastric juices
- **Small Intestine-** Long tube extending from the stomach to the colon, which is the main site for the absorption of food
- **Large Intestine-** Tube located below the small intestine that removes water from undigested food and eliminates waste from the body
  - **Rectum-** where elimination occurs
- **Liver-** Is an organ that secretes bile into the small intestine which allows fats to be broken down
- **Gall bladder-** makes bile, which breaks down fat.



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## Materials:

Provided by Volunteer:

- Digestive organ cutouts (each organ or part in the digestive system will be cut out in construction paper—enough for the whole class)

Students should have ready:

- Tape or glue sticks
- Need TV (or projector) and dvd player if possible
- Student's should have pencils

*If projector/dvd player not available:*

- Soda pop
- crackers
- ziploc bags

## Classroom Set-up:

-I will need 5 minutes to prepare the video

## Classroom Visit

### 1. Personal Introduction:

[10min]

- My name is Ashmi Patel and I am a student at UC Berkeley.
- I am here today to share some information about the digestive system!
- I love sharing information about health and I particularly enjoy teaching others about the human body!
- To begin, I want to get to know you all. Let's go around the room and tell me something you would either like to know more about the digestive system or something you already know.

### 2. Topic Introduction: min]

[5

- How many people have learned a little bit about the digestive system? Can anybody tell me what the digestive system is and why it's important?
  - Write answers down on the board.

### 3. Learning Experience(s): min]

[35

- **Activity #1 [Video]**-Show "The Magic School Bus" video that explores the digestive system. (I have a dvd) [15 min]
  - <http://www.youtube.com/watch?v=wtulxCGMjdk&feature=related> (part 1)
  - <http://www.youtube.com/watch?feature=endscreen&NR=1&v=Ed57mQFGics> (part 2)

OR



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- **Alternate activity #1 (if dvd player/projector is not available) [Ziploc digestion simulator]**- This activity should demonstrate how acids break down food in the stomach.
  - Tell students to put two crackers in the Ziploc bag and crush them up to stimulate chewing. Next, pour a little pop into the bag and seal it. Have students make observations about what the soda is doing to the crackers. Then, have the squish the soggy crackers within the bag for a few minutes and ask them to make more observations.
  - At the end, tell students that the stomach contains acid that degrades food and breaks it down in order for it to pass through the small intestines.
- **Activity #2 [Build the digestive system]**-Provide every student with cutouts of each of the digestive organs or parts. Ask students to arrange the digestive tract (there will be certain organs or parts, such as the gall bladder or liver, of which they will not know where to place). After they arrange the digestive tract, go through the entire system while having the students write key functions of each organ or part on the cutout (work in order of digestion, mouth to rectum). After the entire system is pieced together, have students tape the organs or parts together. [20 min]
  - Ask students if they know the function of each part, before you tell them, as you go through the system.
  - *Example of a vocabulary word: “Liver- secrets bile and breaks down fats”*
  - Introduce fun facts, for example “the large intestine is about 5 feet long!”
  - Main idea for this activity is to introduce vocabulary while simultaneously helping them understand the location of each part of the digestive tract. It is also important for them to understand the function of each digestive component.

OR

- **Alternate activity #2 (if dvd player/projector is not available)**- Follow instructions for **Activity #2** except, explain what each organ does and go through the order together as a class.

#### 4. **Wrap-up: Sharing Experiences:** min]

[5

- Did anybody learn anything new about the digestive system?
- Each part of the digestive tract is equally important in maintaining our health. Every section has its own function that aids in giving us energy to learn, exercise, and do everything we do.
- Making the right choices about our foods is important too. When you eat junk food, things with a lot of fat and very little vegetables and fruits, we feel really slow.
- Eating healthy foods that have protein, whole grains, and nutrients help keep our digestive system healthy and keep the rest of our organs functioning and healthy too!



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## 5. Connections & Close:

- Thank you, bye!
- Clean-up

Total [60 min]

## Follow-up – After Presentation

- Students can visit [kidshealth.org](http://kidshealth.org) to do fun activities and watch more videos about the digestive system
- 
- The Exploratorium has fun activities for kids to learn about the human body
  - Can write these two resources on the board and tell the teacher to pass the information along



## Spit Test

**Objective:** Learn the beginning steps of digestion.

### **Materials:**

- A spoonful of cornstarch
- Two crackers (preferably unsalted)
- Tincture of iodine (you can buy this at the drug store in the first aid section)
- Two glass bowls or small cups

### **Procedure:**

1. Iodine turns dark bluish black when it touches starch. Prove this to yourself by adding a couple of drops to some cornstarch.
2. Break up one cracker into bits and put them into a bowl.
3. Chew up the other cracker. Don't swallow it: keep chewing until the cracker is all mushy.
4. Spit the cracker mush into the other bowl.
5. Put a few drops of iodine in each bowl. Is there a difference?

### **What is going on?**

The enzymes in saliva break down long starch molecules and turn them into short sugar molecules. Chewing is the first step of digestion, and saliva is the second.



### **Ziploc Digestion Simulator**

**Primary Audience: 3<sup>RD</sup>-5<sup>TH</sup> Grades**

**Description:** Acids in your stomach break down food so they can travel into your intestines.

**Keywords:** Digestion

#### **Materials:**

- Soda pop
- Two crackers (salt free soda crackers work best)
- Ziploc Baggie

**Instructions:** Have the students put two crackers in the bag and crush it up a bit with their hands, simulating the chewing process. Next, pour a little pop into the bag and reseal it. At this point, they should make observations about what is happening to the cracker crumbs (they are getting soggy). Next, have them squish the baggie (first making sure it is zipped VERY well) for a couple of minutes and then make more observations about what has happened to the crackers.

**What's Going On?** Like the soda pop, your stomach is a very acidic environment. The acid eats away at the food and breaks it down in order to send it on to the intestines.