**Digestive System (STEAMED Up)** – (this lesson is primarily 5th – may have aspects for 1st but too specific to be taught there)

**(Original idea By Bobbin Cave)**

**Grades 5-6**

**Background:**

1. Requires floor space, can be done in a hallway
2. **Students will be**  acting out an aspect of the digestive tract
3. <http://www.youtube.com/watch?v=08VyJOEcDos> (digestive video for both teachers and students)
4. <http://www.youtube.com/watch?v=au6dYlEVGCg> (Bill Nye- Digestion)
5. <http://kidshealth.org/kid//htbw/DSmovie.html> (digestion movie- animated)

**Preparation**

1. 10-15 minutes after materials are gathered (tract layout, food particle assembled, allow more prep time students are to be labeled)

**Classtime:** 15 - 45 min. (explanation, activity, clean up, discussion) This activity can be expanded for longer if needed.

**Lesson/Activity:**

Summary:

Two parallel strips of tape on the floor 3-4 feet apart and width of classroom represent the digestive tract.

A large filled bag represents the food particle. Students standing on both lines act out each digestive function of the organs, tissues, and cells in the tract as the food particle come to them.

**Assessment of students understanding:**

1. Break the students up into groups of 4-5 students and then give them a set of markers and one large sheet of paper.
2. Instruct the groups to draw a representation of the digestive system in the human body and label each with a quick descriptor. (Technology—camera)
3. Give the students 15 minutes to complete the task and then take 2 minutes to review and allow each group to correct their drawings.

Another Assessment option: Create a song about the digestion systems (5.ML.3.2 Create compositions and arrangements within specified guidelines.)

Once that is complete move into the hands on activity!!

**Material:**

* Large thin plastic bag
* Newspapers
* Paper sacks
* Zip-lock bags
* M&M's candy
* Masking tape
* Markers and paper to label students (optional)
* Sponges
* Labeled spray bottles of water
* Trash can.

**Procedure:**

Things to make ahead of time:

* ***Food tube***:
  + Lay out two parallel lines of tape on the floor, 3' apart and long enough for half of the class to stand shoulder to shoulder on one side of the parallel lines.
  + Put the food particle to be eaten (a large plastic bag with contents described below) at one end, large trash can at the other.
* ***Food particle***: The food particle consists of:
  + M&M's placed in small zip-lock bags.
  + These are placed in wadded newspapers in small paper sacks
  + Place small sacks in large sacks with added newspapers.
  + Place all sacks and add newspapers until the large plastic bag is full.
  + The bag is then taped or tied closed to complete the food particle.

**Action:**

PERISTALTIC MOVEMENT:

* Have students line up on both lines, face each other, and squeeze the food (filled large plastic bag) the length of the food tube.

DIGESTION. Label and/or (instruct) the players:

* Molars (tear food apart-break plastic bag).
* Saliva (use spray bottle to squirt on food).
* Pancreatic juices (spray on food).
* Small intestines (absorb food, find plastic bags of candy and pass to blood).
* Blood (transports food, distribute the food to every cell/participant).
* Large intestine (reabsorbs moisture, sponge up water on the floor).
* Rectum (puts the waste papers in the trash can).

**Suggestions:**

Every student should have a part. Several students can play the same part or other parts can be created.

1. As the food comes to them, have the students tell what they are about to do, or narrate the action ("I’m a grinding tooth and I crush food like I break this bag.")

2. Limit the degree of destruction at each organ.

3. Have the "nutrients" (M&M's) passed to the "blood" given to teacher when found and then returned to the "blood" for distribution to all participants AFTER clean up.

**Evaluation:**

* Discussion at the end of the activity
* Writing activity using the key words that are listed on the board to assist in remembering.

5.L.1.2 Compare the major systems of the human body (digestive, respiratory, circulatory, muscular, skeletal, and cardiovascular) in terms of their functions necessary for life.

4.L.2 Understand food and the benefits of vitamins, minerals and exercise.

4.L.2.1 Classify substances as food or non food items based on their ability to provide energy and materials for survival, growth, and repair of the body.

4.L.2.2 Explain the role of vitamins and minerals, and exercise in maintaining a healthy body

1.L.2 Summarize the needs of living organisms for energy and growth.

1.L.2.1 Summarize the basic needs of a variety of different plants (including air, water, nutrients, and light) for energy and growth.

1.L.2.2 Summarize the basic needs of a variety of different animals (including air, water, and food) for energy and growth.

The **Arts** connection:

Dance –

5.CP.2.2: Use **kinesthetic awareness**, concentration, and focus to enhance the performance of dance **sequences**.

Visual Arts –

5.CX.2.2 Exemplify how information and skills learned in art can be applied in other disciplines

Music –

5.ML.3.1: Use improvisation to create short songs and instrumental pieces, using a variety of sound sources, including traditional and non-traditional sounds, body sounds, and sounds produced by electronic means.

5.ML.3.2: Create compositions and arrangements within specified guidelines.

**Math extensions** –

Measurement - see attached worksheet where students measure using red yarn, then measures in metric (cm) – and can also convert within the system such as meters or dm or mm

* [CCSS.Math.Content.5.MD.A.1](http://www.corestandards.org/Math/Content/5/MD/A/1) Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
* Parallel lines – review/reinforcement of 4th grade curriculum - [CCSS.Math.Content.4.G.A.1](http://www.corestandards.org/Math/Content/4/G/A/1) Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and **parallel lines**. Identify these in two-dimensional figures.

**Information and Technology Standards:**

5.TT.1 – Use technology tools and skills to reinforce and extend classroom concepts and activities.