

Teacher's Guide for "The Digestive Tract"

CT State Standards	National Science Standards
<p>C.16 Describe the Structure of the human digestive, respiratory and circulatory systems, and explain how they function to bring oxygen and nutrients to the cells and expel waste materials</p>	<p style="text-align: center;">Structure and Function in Living Systems</p> <p>The human organism has systems for digestion, respiration, reproduction, circulation, excretion, movement, control, and coordination, for protection from disease. These systems interact with one another.</p>

- I. Vocabulary covered within "The Digestive Tract"
 1. Digestion – process of breaking down food mechanically or chemically
 2. Mouth – place where digestion starts
 3. Saliva – liquid secreted in mouth which starts chemical digestion in mouth to break down starches
 4. Teeth – start mechanical digestion in mouth when teeth grind up food
 5. Esophagus – muscular tube which food travels down from the mouth into the stomach
 6. Stomach – muscular sac where mechanical and chemical digestion occurs
 7. Digestive Juices – secreted in the stomach. This includes gastric juice and HCL to aid in chemical digestion and to create a thick oatmeal like substance called chyme
 8. Mucus – secreted within the stomach to help the stomach to prevent it from digesting itself
 9. Small intestine- organ where most chemical digestion and nutrient absorption take place
 10. Absorption – to take in the nutrients broken down from food
 11. Liver – organ responsible for producing bile
 12. Bile – green liquid produced by liver which breaks down fats
 13. Gallbladder – small sac which stores bile
 14. Pancreas – organ which for digestion, releases pancreatic juice
 15. Villi – small, finger-like projections which absorb nutrients from the digested food
 16. Large Intestine – location where water is reabsorbed and waste is manufactured
 17. Feces – waste product made at the end of digestive process

- II. Understanding the process of digestion outlined in "The Digestive Tract"
 - A. Chemical versus Mechanical Digestion

1. Digestion is the process where food is broken down into the smaller components that are usable by the body (fats, carbohydrates, and lipids) as mentioned within the refrain.
 2. Mechanical digestion is physical breaking down (chewing, tearing, grinding, churning) of food particles into smaller pieces. Chemical digestion is the breaking down of food into smaller pieces by the use of chemicals (acids, fluids, juices, etc.)
- B. The path of digestion
1. Understanding all of the organs of the digestive system and the order of operation is often confusing for students. One of the major purposes of the song is to highlight the path of digestion in a fun, singable way while also touching upon the major fluids and organs that are involved.
 2. The path
 - a. Inside the mouth: teeth starts mechanical while saliva starts chemical digestion
 - b. Esophagus – food travels down this tube into the stomach
 - c. Stomach – Food enters stomach where churning occurs (mechanical) and gastric juice and HCL is released (chemical digestion) Mucus is released to prevent stomach from digesting itself. Food is now a lumpy oatmeal-like substance called chyme.
 - d. Small intestine –chyme enters this organ to finish chemical digestion. Here in the duodenum, multiple organs secrete various fluids to aid in chemical digestion: Bile is secreted in liver and stored in gallbladder, pancreatic juice is made by the pancreas, intestinal juice is released. At the same time, villi lining the small intestine absorb nutrients released from the food as digestion occurs.
 - e. Large Intestine – Water is reabsorbed here and bacteria work on the remaining chyme turning it into the waste product feces which then passes through a muscular tube called the rectum and out the anus.

Student Worksheet for "The Digestive Tract"

Part I: Match the following terms with the correct definition.

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| 1. ___ Saliva | A. Waste product produced at the end of digestion |
| 2. ___ Gallbladder | B. Green liquid made by liver which breaks down fats |
| 3. ___ Esophagus | C. Small fingerlike projections which absorb nutrients |
| 4. ___ Feces | D. Organ where water is reabsorbed |
| 5. ___ Teeth | E. Tube which carries food from mouth to stomach |
| 6. ___ Bile | F. Fluid produced by mouth to break down starches |
| 7. ___ Large Intestine | G. Storage sac which holds bile |
| 8. ___ Villi | H. Part of mouth which begins mechanical digestion |

Part II. For the following short answer questions, answer them to the best of your ability using complete sentences.

1. How do mechanical and chemical digestion differ? Make sure you explain how they differ but also include at least 2 examples of each!

2. Why is the small intestine considered the place where the majority of chemical digestion takes place? Give examples of what organs are involved and what fluids are released within the small intestine to support this statement.

3. Sketch a diagram of the path of digestion and label it using the terms provided below:

Mouth	Teeth	Stomach	Esophagus	Gallbladder
Large Intestine	Small Intestine	Pancreas	Liver	