



### Science Objectives

- Students will discover that groups of specialized cells work together to form tissues and organs.
- Students will relate the connection between structure and function to specific organs of the digestive system.
- Student will learn how organs of the digestive system work as a team to digest food.

### Vocabulary

- mouth
- pharynx
- esophagus
- stomach
- stratified squamous epithelial tissue
- skeletal muscle tissue
- smooth muscle tissue
- simple columnar epithelial tissue
- microvilli

### About the Lesson




- This simulation illustrates and describes the specific tissues of digestive organs that work as a team to digest food.
- As a result, students will:
  - Understand how structure relates to function in the human body.
  - Understand the relationship among cells, tissues, organs, and organ systems using the digestive system as an example.

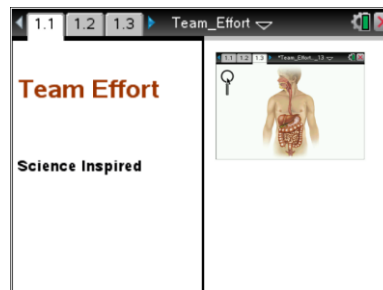


### TI-Nspire™ Navigator™

- Send out the *Team\_Effort.tns* file.
- Monitor student progress using Class Capture.
- Use Live Presenter to spotlight student answers.

### Activity Materials

- Compatible TI Technologies:  TI-Nspire™ CX Handhelds,  TI-Nspire™ Apps for iPad®,  TI-Nspire™ Software



### Tech Tips:

- This activity includes screen captures taken from the TI-Nspire CX handheld. It is also appropriate for use with the TI-Nspire family of products including TI-Nspire software and TI-Nspire App. Slight variations to these directions may be required if using other technologies besides the handheld.
- Watch for additional Tech Tips throughout the activity for the specific technology you are using.
- Access free tutorials at <http://education.ti.com/calculators/pd/US/Online-Learning/Tutorials>

### Lesson Files:

#### Student Activity

- Team\_Effort\_Student.doc
- Team\_Effort\_Student.pdf

#### TI-Nspire document

- Team\_Effort.tns



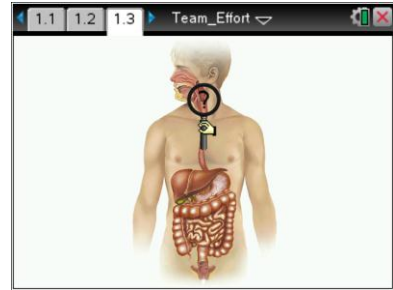
### Discussion Points and Possible Answers

Have students move to page 1.2 and read the background information for the activity.

#### Move to page 1.3.

Have students read the instructions for the simulation.

1. Have students select and drag the magnifying glass across the diagram of the human body until a question mark “hot spot” appears.
2. Students should select the hot spot and read the information that appears. Have them record the information in the table on their student activity sheets.
3. Have students repeat step 2 until they have filled in all of the cells in the table.



**Tech Tip:** To access the Directions again, select **menu** or **Document Tools (⌘)** > **Team Effort** > **Directions**.



**Tech Tip:** To access the Directions again, select **⚙** > **Team Effort** > **Directions**.

Digestive Organ	Tissue Type	Function
<b>Mouth</b>	stratified squamous epithelium	layered flat cells that protect mouth from abrasion/infection
<b>Pharynx and Upper ½ of Esophagus</b>	skeletal muscle stratified squamous epithelium	helps swallow food; stratified squamous epithelium protects the lining
<b>Bottom ½ of Esophagus</b>	smooth muscle	smooth muscle moves food to stomach with wave-like contractions



<b>Stomach</b>	simple columnar epithelium	secretes mucous and enzymes for chemical digestion
<b>Small Intestine</b>	simple columnar epithelium with microvilli	absorbs nutrients from digested food

**Move to pages 1.4 - 1.10.**

Have students answer the questions 1 - 7 after they fill in the chart. You can have them answer the questions either on the device, the activity sheet, or both.

Q1. What tissue type forms the lining of the mouth?

**Answer:** C. stratified squamous epithelium

Q2. Stratified squamous epithelium means

**Answer:** A. layers of flat cells outer layer

Q3. How do you think the structure of the mouth lining relate to its function?

**Sample Answer:** many layers for protection; flat cells to form a smooth lining

Q4. What tissue type helps you chew and swallow your food?

**Answer:** C. skeletal muscle

Q5. What tissue type pushes your food down the esophagus to the stomach?

**Answer:** C. smooth muscle

Q6. What tissue type in the stomach adds juices to chemically break down your food?

**Answer:** B. simple columnar epithelium

Q7. What is the function of the microvilli that line the small intestine?

**Answer:** B. absorb nutrients into the blood



**TI-Nspire Navigator Opportunities**

To quickly assess student understanding, use Quick Poll to gather answers to any of the questions through the lesson.



**TI-Nspire Navigator Opportunities**

Use TI-Nspire Navigator to capture screen shots of student progress and to retrieve the file from each student at the end of the class period. The student questions can be electronically graded and added to the student portfolio.

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**Wrap Up**

When students are finished with the activity, pull back the .tns file using TI-Nspire Navigator. Save grades to Portfolio. Discuss activity questions using Slide Show.

**Assessment**

- Formative assessment will consist of questions embedded in the .tns file. The questions will be graded when the .tns file is retrieved by TI-Nspire Navigator. The TI-Nspire Navigator Slide Show can be utilized to give students immediate feedback on their assessment.
- Summative assessment will consist of questions/problems on the chapter test, inquiry project, or performance assessment such as the creation of a labeled model of the digestive system.