



STAGE 2

FOOD AND OUR BODY

Students will learn how grains support a healthy diet and help keep the circulatory and digestive systems healthy.

Lesson 1 • Digestive System

Overview

This lesson introduces the digestive system; the recommended activity for this lesson is **making poop!** That's right, poop. Students will use resealable (Ziplock) bags and a pair of sheer tights to learn how crackers are digested! The hands-on, engaging activity helps students reinforce their learning.

We understand that not everyone may feel comfortable with the poop-making activity, so we've also provided alternative options.

Learning Goals

Students will:

- Identify and label the human digestive system.
 - Describe the basic function of the digestive system.
 - Develop an awareness of food allergies and how they affect the immune system.
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Materials Needed

- [Stage 2 Lesson 1 Teaching Slides](#)

- [Student Resource Packet](#) (all lessons, printable)
 - [STEMterprise Deliverables Tracker](#)
 - Video:
 - [What is a Food Allergy?](#)
 - [Gluten and Celiac Disease](#)
 - [What is a Gastroenterologist?](#)
 - [Digestive System Multiple Choice Minds ON](#) (optional)
 - [Digestive System Overview NFU](#) (optional)
 - [Digestive System Fillable Diagram](#) (optional)
 - [Interactive Digestive System Sheet](#) (optional)
 - Poop-Activity Supplies
 - Banana (½ per group)
 - Crackers and/or instant oatmeal (3-4 per group) *dietary fibre
 - Orange juice (to represent stomach acid)
 - Water
 - Large Ziplock plastic bags
 - 1 leg cut off a pair of sheer tights or knee high style (i.e., small intestine) **Dollarama
 - Gloves – small size (1 pair per student)
 - Scissors
 - A tray or large bowl
 - 1 paper cup with a 1-cm hole (i.e., large intestine); additional paper cup as a plunger
 - Slide 16 with instructions for students
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Teachers' Notes

Before the lesson:

- **Decide on your activity:** make poop or use an alternative activity (listed below).
- Preview the two video options on slide 9 and choose the one that best suits your class.
- Gather supplies for your “build your own digestive system” activity. Details and a video are on slide 3.
- We provide an extension discussion to discuss allergies, gluten, and celiac disease as a consideration for your students and pizza customers.

Minds-On: Ask students a simple question about the digestive system. If you would like something a little more, check out this [online quiz](#) or our [Digestive System Multiple Choice Minds ON](#) that could be done as a class.

Check out the [Career Connections slides](#) and view the Meet a Poop Doctor video, a fantastic conversation between a gastroenterologist and kids. This optional slide has been added at the end of this lesson.

Share your experience with Good in Every Grain! Tag us online @GoodinEveryGrain or send images of your in class experiences to web@gfo.ca

Alternate activity options:

- **Create a Game:** Students can make a trivia game with information from slide 11 or these resources: National Geographic Kids [The Human Digestive System](#); Kids Health [Digestive System](#)
- **Code** an Ozobot digestive system path: [Coding Connections Slides](#) are included at the end of this slide deck
- **Cut and Paste:** a [digestive system sheet](#) from Twinkle
- **Virtual:** [Gizmo](#) offers a “build your own digestive system.” Note: You need to sign up to access this resource.

Steps for “Making Poop”:

1. Place the banana and crackers inside the Ziplock bag (“eat”). Slowly add a little bit of water (“saliva”).
2. Let all the air out and zip the bag shut. Then smash all the ingredients with your hands until no more clumps are present (“chew” your mix).
3. Squeeze the food into one end of the bag – it went from the mouth via the esophagus to the stomach. Add some acid to the mix (orange juice) and continue mashing it.
4. From the stomach, the snack needs to pass into the tights (small intestine). Tilt the bag up slightly and cut a small hole in one corner of the bag. (The corner you’re not tipping the mix toward!) Squeeze the contents of the bag into the cut-off tights while holding everything above the tray/bowl.
5. Squeeze the food through the tights. Keep squeezing to let the liquid run out. (Note that the water is actually absorbed in the large intestines!)
6. Eventually, cut the toe off the tights and squeeze the waste food out into the plastic/paper cup (“large intestine”). Make sure to cut a small (1-cm radius) hole in the bottom of the cup (“anus”).
7. Finally, push the waste food through the bottom of the cup onto the tray (“elimination”).

Time Frame: 60+ min

This lesson may take more than one class period; however, the poop-making activity can be completed within a 40-minute block. The Minds On activity and pre-teaching about the digestive system will require additional time.

Career Connection

There is an optional Career Connection at the end of this and all lesson slides and the [Career Connection Slides](#) can be found at this link. Career: Gastroenterologist

Curriculum Expectations

Science - Human Health and Body Systems

B2.1 identify systems of the human body, and describe their basic functions

B2.2 describe the basic structure and function of vital organs in various systems in the human body

B2.3 describe interrelationships between human body systems

Inquiry:

A1.2 use a scientific experimentation process and associated skills to conduct investigations

Extension:

B2.4 identify various diseases and medical disorders in humans and the organs and/or body system or systems that they affect

STEMterprise References for Educators

STEMterprise Webpage: <https://goodineverygrain.ca/ontario-farming-stemterprise/>

Video Links

- [Ontario Farming STEMterprise: Grade 5 Pizza Shop Business](#)
- [Students: Are you ready for your own pizza business?](#)

STEMterprise Teacher Support Resources

- [Ontario Farming Grade 5 Educator Information Packet](#)

- [STEMterprise Grade 5 Assessment Planning](#)
- [Project Overview](#)
- [Combined Grade Activities](#)
- [Career Connections Slides](#)
- [Coding Connections Slides](#)
- [Good in Every Classroom Education Blog](#)
- [Good in Every Classroom Newsletter Sign-Up](#)

Stage 2 | Lesson 1: Digestive System

Slide 9: Business Connection	This Business Connection slide is intended to get kids thinking about the learning ahead as it specifically relates to their pizza business. Encourage the students to make early connections about the learning goals and the connection to their business. At this initial stage of STEMterprise, students may not have any ideas to share yet. This can be a question for them to consider at this point. This question will come up in each lesson and they can make these connections further into the project. The simple signposts along the bottom give students a sense of where they are on their learning journey. You can note the number of stages and which lesson you're on in that particular stage.
Slide 10 - 11: Minds-On!	A simple quiz to start thinking about the digestive system. If you're looking for something a little more challenging, look to Kids Health for their online quiz. Or, use ours! <i>Thanks to Leah Carter for sharing this with us!</i>
Slide 12: The Digestive System	Choose one of the two videos for your class to watch. Tell students - When designing a food product, we must consider where that food is going and who the consumer may be. Let's learn about the digestive system. Video: How Your Digestive System Works (Ted Talk) How Your Digestive System Works (Kids Health)
Slide 13: The Digestive System	Educators can use this slide to review the video - have students try to guess the answers. Note that <u>the answers under the orange boxes will be revealed when you click.</u> This slide can be used to review the “goal” of the digestive system. The video may generate many burning questions for your class. Consider creating a “burning questions” board to capture questions that pop up while you are learning new material that requires further inquiry.
Slide 14:	Use this slide to explain which organs are involved in the digestive

The Digestive System	system, each organ's different role, and to address any misconceptions. Suggestion: Print or post a copy of this on Google Classroom. Create a Game: Have students work in their business groups to create questions for a game to help students learn the path that food takes through the digestive system. ----- How the system works: The digestive system begins with the chewing of food in our mouths. When we chew, we are breaking up large pieces into smaller pieces and our saliva also helps break down food while we chew. Once we are finished chewing, we then swallow our food. When we swallow our food is pushed back by our tongues into our throat and then into our esophagus. The esophagus is a long tube that leads to our stomach. The muscles of the esophagus help push food down. Our food then enters the stomach. The food hangs out in the stomach for a few hours. While it's in there, enzymes break down the food into usable nutrients for our bodies. These nutrients include proteins and carbohydrates. The stomach releases acid that helps break down the food. The food then moves into the small intestine. The small intestine is quite long. The liver and pancreas work together with the small intestine to provide chemicals that help break down nutrients into smaller parts. The small intestine helps to absorb the nutrients back into the body. Water is also absorbed from the food. The rest of the food that is not used is then pushed along into the large intestine. Here food that the body cannot use is moved through the large intestine and eventually leaves the body as waste.
Slide 15: What is an Allergy (Extension)	Educators report that celiac and gluten allergies are coming up as a question and concern. Depending on the profile of your class, you may wish to discuss allergies and celiac with your students. Ask students: Does everyone's digestive system work the same? Do they think there is a difference between a male and female digestive tract? What sort of conditions are you aware of that might complicate food travelling through the digestive tract? Link: https://www.youtube.com/watch?v=Zrsp0d6NEWg

Slide 16: Gluten and Celiac Disease (Extension)	Use this video from NIH to provide insight into gluten and celiac disease - Stop at 2:31. There are many video options available and depending on your class, you may find one is better suited than another: Children's Hospital Colorado. Do you have a student with celiac disease? Consider sharing this video that presents a child's perspective about living with celiac disease. Link: https://www.youtube.com/watch?v=0d3FjMgYSzY
Slide 17: Action: Building the Digestive System (Activity)	IMPORTANT! We are providing teachers with alternative options for the digestive system. If you can manage it, making poop is well worth the effort. Option 1 <i>*Recommended:</i> Hands-On: Making Poop (see slide 5 and/or 18 for instructions). Teach the digestive system by “making poop” with your students. It’s an activity that is sure to get their attention! This lesson can either be modelled at the front of the class, done in small groups or pairs. It is recommended that you allow 30-40 min + clean up for the hands-on activity. Students can either follow steps OR you can provide the supplies and challenge them to make the system on their own. This activity was a hit with our pilot school! Tip! Consider whether this will work for your students if they have any gluten allergies/intolerances or celiac disease. Virtual Option: Gizmo offers a “build your own digestive system.” Note: You need to sign up to access this resource.
Slide 19: Action: Digestive System Diagram (Activity)	If you would prefer students to label a diagram, here is a printable version of our Digestive System Fillable Diagram. Teachers - depending on your activity choice, you may feel this is not necessary.
Slide 20:	Lastly, students can use the Interactive Digestive System Sheet from

Action: Interactive Digestive System (Activity)	Twinkle to cut out the digestive system function flaps below and stick them on the correct body part on the worksheet. Teachers - depending on your activity choice, you may feel this is not necessary.
Slide 21: Wrap Up	If you haven't already done so, now is a great time to create a THINGS TO CONSIDER chart for your class. Provide students with sticky notes, one per business group or pair. Have them add one thing they need to remember (in relation to this lesson) as they develop their pizza business. This is a great time to review what they have learned (e.g., how will we make sure food has nutrients, how can we help keep people with allergies safe?) You might consider asking the class "What things will we need to consider when planning our pizzas (e.g., allergies, nutrients)?" before they write their sticky notes. Have a few students share answers with the class.
Slide 22: What's Next?	The "What's Next?" slide is intended to be flexible and may be customized or filled in by teachers based on their classroom needs, pacing, and next steps.
Slide 23 - 24: Career Connection	Play video. This is a fantastic discussion with a poop doctor!
Slide 25 - 26: Coding the Digestive System	This task is inspired by the - Science North Ozobot Circulatory System Lesson. For this task, students create an Ozobot path for the Digestive System. This can also be done with larger BeeBots on chart paper.