



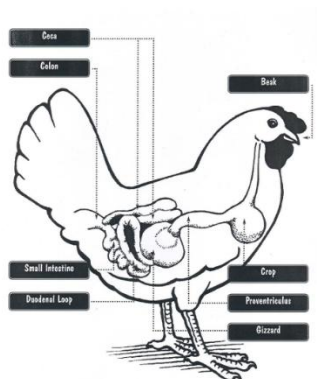
Digestion Rocks!

Examining the Digestive System of a Chicken

Students will compare and contrast the similarities and differences of the chicken digestive system to a human digestive system. Using hands on models, students will explore how chickens pick up food in their beaks, store food in a crop, break down food into smaller pieces without teeth, and eliminate waste at the end of digestion.

Subject Levels/ Suggested Grade

Grade 5-6 Science



Written by Amy Bawtinheimer, Education Specialist (2025-2026)

Grade and Subject	Curricular Competencies	Content Connections
Grade 5 Science	Demonstrate a sustained curiosity about a scientific topic or problem of personal interest Make observations in familiar or unfamiliar contexts Identify questions to answer or problems to solve through scientific inquiry Choose appropriate data to collect to answer their questions Observe, measure, and record data, using appropriate tools, including digital technologies Co-operatively design projects Transfer and apply learning to new situations Generate and introduce new or refined ideas when problem solving	• The basic structures and functions of body systems, including the digestive, musculo-skeletal, and respiratory systems
Grade 6 Science	Demonstrate a sustained curiosity about a scientific topic or problem of personal interest Make observations in familiar or unfamiliar contexts Identify questions to answer or problems to solve through scientific inquiry Make predictions about the findings of their inquiry Choose appropriate data to collect to answer their questions Observe, measure, and record data, using appropriate tools, including digital technologies Compare data with predictions and develop explanations for results Co-operatively design projects Transfer and apply learning to new situations Generate and introduce new or refined ideas when problem solving	• The basic structures and functions of body systems, including the excretory, reproductive, hormonal, and nervous systems

Teacher Background

Chickens are domesticated fowl raised for their meat or eggs. A male chicken is called a rooster, a female chicken is called a hen, and young chickens are called chicks. Chickens that are reared for their meat are called broilers or broiler chickens, and chickens raised for egg production are called layers or laying hens.

Because chickens lack teeth, their digestive tract has evolved unique physical and chemical structures to efficiently break down whole grains, seeds, and insects.

Path of Digestion

The process moves sequentially through several specialized organs:

1. Mouth & Esophagus: The Intake.

Chickens use their beaks to pick up food. Since they cannot chew, saliva acts as a lubricant to help the food slide down the esophagus smoothly.

2. The Crop: Temporary Storage.

Food moves into the crop, an expandable storage pouch located at the base of the neck. Here, food is held and softened by moisture before moving further into the digestive tract. This allows birds to consume food rapidly and digest it later.

3. The Proventriculus: The True Stomach.

Food enters the proventriculus, the glandular stomach. This is where chemical digestion begins as digestive enzymes and hydrochloric acid are secreted and mixed with the food.

4. The Gizzard: Mechanical Grinding.

Next is the gizzard, a thick, muscular organ that acts as the chicken's "teeth." The gizzard uses powerful muscle contractions, often aided by swallowed pebbles or grit, to physically grind the food into a fine paste.

5. Small Intestine & Ceca: Nutrient Absorption.

The ground paste moves into the small intestine, where nutrients are absorbed into the bloodstream. At the junction of the small and large intestines sit two blind pouches called ceca, where bacteria break down remaining fiber.

6. The Cloaca: Elimination.

The remaining waste enters the cloaca, a multi-purpose chamber where the digestive, urinary, and reproductive systems terminate. Waste is expelled out of the body through the vent.

Quick Reference Vocabulary for the Classroom

- Broiler: A chicken raised specifically for meat production.
- Precocial: Born or hatched in an advanced state, capable of feeding itself and moving independently right away.
- Supply Management: A Canadian economic system that regulates the production of dairy, poultry, and eggs to match consumer demand.
- Emulsion: A smooth mixture of two liquids that don't normally mix (relevant to how fats are broken down in the small intestine via bile).

Materials

- Chicken Digestion Station materials (see each activity for complete list)
- Chicken Digestive System handout, with one copy for each station, highlighting the area being learned about. A diagram is available for download in the resource [Farm Animal Digestive Systems Diagrams | BC Agriculture in the Classroom Foundation](#)
 - Build a Beak – highlight the beak and esophagus
 - Collecting in the Crop – highlight the crop and proventriculus
 - Grinding Gizzards - highlight the proventriculus and gizzard
 - A-maze-ing Intestines – highlight the intestines, ceca, and cloaca
- Student handouts:
 - Digestion Rocks Booklet

Note: the stations in this lesson are designed to run concurrently, with students rotating in small groups (approximately six-eight students) to each station in approximately 15–20-minute intervals with each station supervised by an adult to assist in the set-up of materials, initial content instruction for each station, and to answer student questions. However, we encourage teachers to adjust the format of these station activities and the timing of each station to best fit their classroom learning needs.

Procedure

Hook:

- Post a picture of a chicken for students to look at, either digitally displayed or on a large chart paper. As a class, brainstorm as many body parts of the chicken as they can and label their location on the diagram. Most students will be able to label easily visible body parts, including heads, wings, tails, legs, and feathers. Some students may also identify body parts based on commonly seen meat cuts in grocery stores and markets, including chicken breasts, thighs, and drumsticks.
- Once the external body structures are named, ask students to think about the structures inside our bodies we can't see, specifically parts of our digestive systems. Have students brainstorm as many parts of the digestive system as they can for humans, and to make a guess about how many of those same parts chickens have.
- Explain to students that chickens and other birds have some very unique parts of their digestive systems, and they are going to explore these unique parts through doing activities in four stations.

Body:

- Provide students with a copy of the Digestion Rocks booklet. Have students turn to the Know, Wonder, Learn (KWL) page. Explain that this page will be a way for students to keep track of their learning as they travel through the stations.
- Starting with the Know column, have students write down two-three things they know or think they know about chickens or the digestive system (this can include information from the class brainstorm). In the Wonder column, have students record two-three questions they have about the digestive system of a chicken, or two-three things they hope to learn about the digestive system of a chicken. Tell students the Learn column will be a place where they can record answers to these questions at the end of the station activities, and to leave it blank for now.
- Divide the students into small groups of approximately six and send each group to a starting station. At the end of each station time, have students rotate to the next station activity in order until they have completed all four stations.

Station 1 – Build a Beak!

Materials: beak making supplies (spoons, paper, plastic plates, cardboard, etc.), crafting supplies such as scissors, tape, glue, and markers, marbles (“food”) and an “esophagus” (we recommend a pool noodle, but any long tube large enough to fit a marble will work) leading to a bucket or other collection bin for the marbles.

- Ask students to describe the role of their mouths in digestion. What are some jobs their mouth does? Answers may include chewing, swallowing, breaking food into smaller pieces, or covering food in saliva to make it easier to swallow. Have students record their answers in their Digestion Rocks booklet.
- Now ask students to compare their mouths to the beak of a chicken. In the similarities column, ask students to write down one-two things that both chicken beaks and human mouths do. In the differences column, ask students to write down two-three things that beaks do that our mouths can't do. One of those answers should be picking up food from the ground.
- Explain to the students that they will be designing their own “beak” to perform the same functions as a chicken's beak. Their beaks must be able to open and close, pick up “food” from the ground, and hold onto food long enough to carry to the “esophagus”.
- Allow students between 5-10 minutes to make their beaks.
 - o Some beak inspiration photos can be found at the end of this resource kit for students who may need assistance coming up with ideas.
- Once the beaks are made, scatter marbles around a well-marked area to mimic feed spread for chickens to eat. Set a timer for 5 minutes, and have the students use their beaks to pick up one marble at a time and carry it to the “throat” tube, placing it inside. Keep track of how many marbles students can pick up before the time is up!
- At the end of the activity, have the students share something that worked well about their beak design, and something they would like to improve if they could make their beak again. They can also record these observations in their booklets before moving to the next station.

Station 2 – Collecting in the Crop!

Materials: a bag or pouch (ideally with some stretch), marbles (or other material to simulate chicken food), stopwatch or timer, device to play music

- Ask students if they have ever had to eat food really quickly before. Have them volunteer some downsides to humans eating food too quickly – answers may include upset stomachs, feeling too full, not wanting to move much, or feeling very sleepy.
- Explain that chickens don't move food to their stomach (called the proventriculus) right away, but instead, the food is stored in a special expandable pouch called a crop. Have students brainstorm some reasons why it could be beneficial for chickens to be able to store their food in an expandable pouch in their bodies before it moves to the stomach. Brainstorm ideas may include allowing the chickens to eat fast, allowing them to get away if predators show up, allowing them to eat lots of food when it is available, and allowing the food to digest more slowly over time to prevent digestive upset. Have students record these brainstorms in their booklets
- Give each group of students an empty bag or pouch – this will simulate the crop. Tell students their goal is to fill up their crop with marbles spread over the station area while the music plays, but if the music stops, they must close their crop bags and freeze in place until it starts again!
 - o If desired, encourage students to move their arms like wings and cluck like chickens while collecting food!
 - o For a more challenging version of the activity, give students specific instructions for how they can move – examples may include hopping on one leg, walking backwards to each marble, or having to play rock paper scissors with another player to determine who gets to add the marble to their crop.
- Repeat playing the music and pausing until all the marbles have been collected. Have students count how many pieces of food they fit in their crops and record the answer in their booklets.

Station 3 – Grinding Gizzards

Materials: For each pair of students - two identical containers with lids, two crackers, marbles, rocks, or other small objects to act as the “grit” inside a gizzard, stopwatch or timer

- Ask students to explain which part of our bodies is the first to break food into smaller pieces (teeth). Explain that chickens do not have teeth, so they break food down in a special organ called a gizzard. However, for the chicken’s gizzard to work properly, the chicken must eat some non-food particles when it is very young, which may include rocks, oyster shells, or other gritty materials. These materials help the strong muscles of the gizzard grind down the chicken food into small particles that are easier for the chicken to digest.
- Ask students to make a prediction for which version of the chicken gizzard (with or without rocks) will break the food particles down the quickest and into the smallest pieces. Have students record their guesses in their booklets.
- Give each student a cracker to place inside their empty “gizzard”. Set a timer for about two minutes, and have students take turns shaking the gizzard for one minute each to try and break up the cracker.
- Have students take off the lid and observe the cracker after the timer ends. There should be some breakage of the cracker, but many large pieces left.
- Next, have students add a new cracker to the second “gizzard”, as well as marbles or rocks to mimic the gritty materials found in a real gizzard. Set a new timer for two minutes and have students take turns shaking the gizzard for one minute each to break up the cracker.
- Have students observe the cracker in the second gizzard and record their observations after the timer ends to answer which gizzard broke down the food into the most pieces and the smallest pieces.
 - o Ensure that the cracker crumbs are carefully disposed of at the end of the activity so that each group has an empty gizzard to start with.

Station 4 – A-maze-ing Intestines!

Materials: Each maze will need a shoe box lid with 5 marble sized holes spaced evenly across it, 5 marbles, 1 larger ball (to represent solid waste), bendy plastic straws, pipe-cleaners, or other materials to form “walls”, and tape.

- Ask students to explain the role of the intestines in digestion. Remind them there are two main roles – to absorb nutrients into the body, and to collect and move solid waste to pass through the end of the digestive system.
- Have students split into groups of two or three and give each group a shoebox lid with holes poked into multiple places, as well as flexible plastic drinking straws and some tape. Tell students they will need to work together to design a maze to mimic the intestines in the digestive system, with the maze path passing through all of the smaller holes (which mimic nutrient absorption) and ending with the largest hole to simulate the cloaca where waste is excreted.
- Give students 5-10 minutes to construct their mazes by taping the bendy straws to the bottom of the box to form channels for the marbles to roll through. Each maze may look slightly different but should have a path that overlaps all the nutrient absorption holes and ends with the largest opening of the cloaca.
- Give each student five marbles and one larger ball. Ask the students to predict what these materials represent in their model and record the results in their booklets – the marbles are absorbable nutrients, and the larger ball is the solid waste that has to be excreted at the end.
- Working as a team, the students add the marbles and ball to the start of their maze and carefully move the maze around by lifting and tilting the box. The goal is for the marbles to fall through the smaller holes before the solid waste gets to the end of the maze!
- At the end of the activity, have the students remove the straws and tape, keeping the straws for the next group to use. Have them record in their booklets whether they were successful in navigating the intestine maze and answer the additional questions.

Conclusion:

- Have students return to their initial KWL chart at the front of the booklet, and record one thing they learned at each station in their Learned column, as well as completing any of the station specific sections of their booklets they may not have been able to complete earlier.

Extension Activities

- Explore other animal digestive systems using the BCAITC resource [Farm Animal Digestive Systems Diagrams | BC Agriculture in the Classroom Foundation](#)
- Learn more about chickens through these resources available at BCAITC and the BC Chicken Grower's Association/Poultry in Motion
 - o [Spotlight Series on Chickens | BC Agriculture in the Classroom Foundation](#)
 - o [Grow BC - Chicken Story | BC Agriculture in the Classroom Foundation](#)
 - o [Teaching Aids | Poultry in Motion](#)
- Bring in a sample of chicken feed from a feed supply store for students to examine and label each ingredient
- Invite a chicken farmer into the classroom to present on their career, or invite the Poultry in Motion barn to visit your school. You can learn more about Poultry in Motion tours here: [SCHOOL Presentations | Poultry in Motion](#)
- Take a virtual tour of a chicken farm using the following links:
 - o [Spotlight on Chickens: Broiler Chickens BC Farm Tour | BC Agriculture in the Classroom Foundation](#)
 - o [Spotlight on Chickens: Broiler Hatching Eggs BC Farm Tour | BC Agriculture in the Classroom Foundation](#)

Credit

Thanks to the BC Chicken Grower's Association for providing background information for this resource.

Digestion Rocks!

Name: _____

Date: _____

Know: What do I already know, or think I know about chickens? What do I already know or think I know about the digestive system?	
Wonder: What questions do I have about chicken digestive systems? What do I want to learn about chicken digestive systems?	
Learn: What are new facts I learned about the digestive system of a chicken?	

Build a Beak!

What role does our mouth play in the digestive system?

Similarities between Beaks and Mouths	Differences between Beaks and Mouths

Design a Beak Activity Questions:

What materials did you use to build your beak?

What worked well on your beak?

What would you change if you built your beak again?

Collecting in the Crop!

What are some reasons that chickens may need a crop to store food?

Is it important that the crop expands? Explain your answer:

Collecting in the Crop Activity Questions:

Draw how many pieces of food where you able to fit in your crop during the game:



Grinding Gizzards!

Grinding Gizzards Activity Questions:

Predict: Which version of the gizzard do you think will break the cracker into the most pieces?

Predict: Which version of the gizzard do you think will break the cracker into the smallest pieces?

After the Grinding Gizzards Activity:

Conclude: Which gizzard broke the cracker into the most pieces?

Conclude: Which gizzard broke the cracker into the smallest pieces?

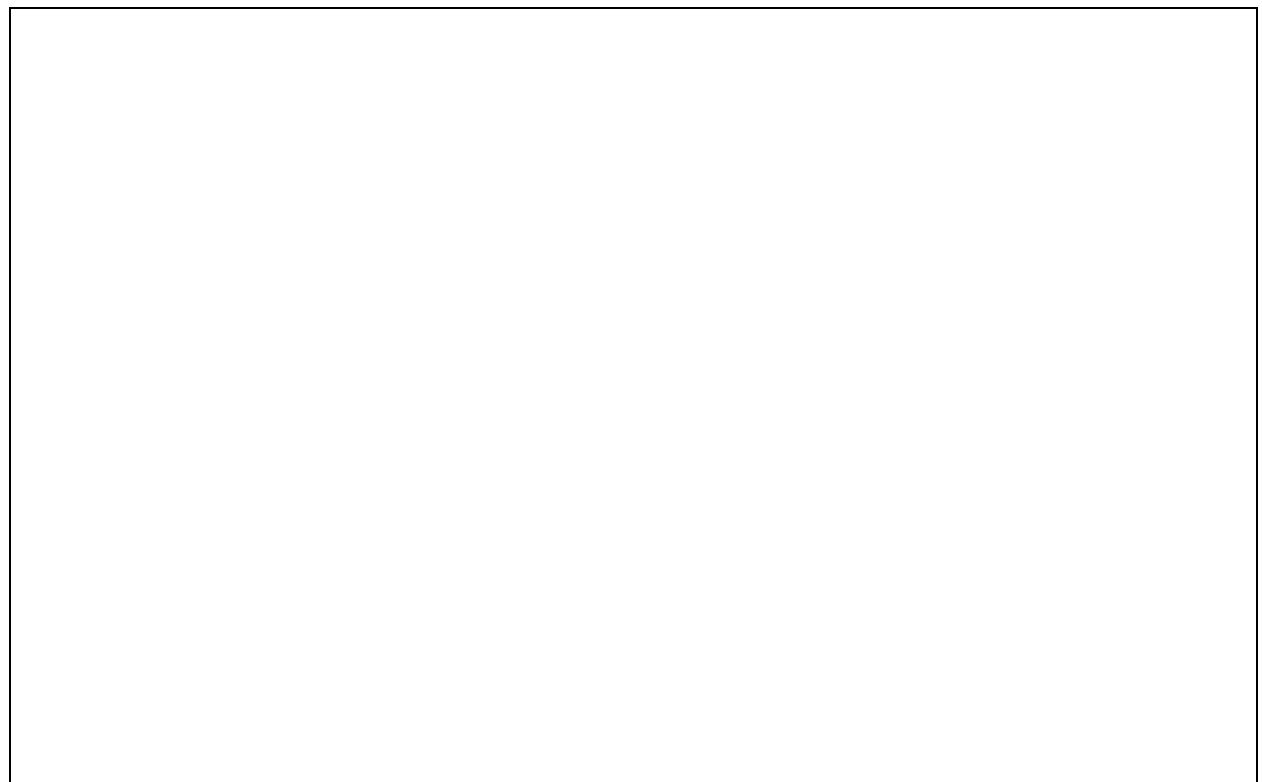
A-maZe-ing Intestines!

What are the two jobs of the intestines in digestion?

What role do you think the marbles represent in the intestine maze?

What role do you think the larger ball represents in the intestine maze?

Draw a picture of your intestine maze path:



Did all of your marbles and larger ball make it out of the maze?
