



EGG-CELLENT EMBRYOLOGY

Grade Level

3-6

Length of Lesson

5-10 minutes each day for 21 days

Objective

By the end of this lesson, students will have a better understanding of how chickens develop inside an egg.

Materials Needed

- Copies of chicken development pictures*
- [White, plastic eggs](#)
- Egg cartons

Standards

NGSS

3-LS1-1; 3-LS4-4; 4-LS1-1; MS-LS1-1; MS-LS4-3

*To print the embryo pictures so that the pictures line up with the facts, set your printer settings to print on both sides and to flip sheets on the short edge.

Lesson Summary

This lesson is a fun activity that allows students to see how the chick is developing inside of the egg, whether you are incubating eggs in your classroom or not! Students should have a basic understanding of the life cycle of a chicken (Egg—Embryo—Hatchling—Chick—Chicken).

Suggested Sequence of Events:

1. Set Up: Print the embryo development pictures on printer paper or cardstock, cut them all out, and then laminate for multiple uses! Then number the plastic eggs 1-21 and place the embryo development picture into its matching numbered egg. Lastly, place the eggs in the egg cartons. Make enough sets for students to work in small groups of two or more.
2. Read through the IAITC Poultry Ag Mag to learn more about chickens and other poultry facts! Interactive online versions can be found on our website.
3. Complete the activity following the procedures:
 - Define the word **embryology** as a class and talk about how this is an important part of all plant and animal life cycles!
 - Ask your students if they know how the embryo develops in its egg. Have your students brainstorm and share.
 - Read the background information on the Teacher Resources page to your class and then have students write a few questions they hope to have answered about chick development.
 - Talk about what chicken eggs require for a healthy chick to grow (temperature, rotation, tools used to help, etc.)
 - Each day, have students open the egg with the correct day on it, and observe what the embryo looks like. Then, have them flip over the laminated egg and read about what is developing on that day.
4. Whole class discussion and reflection of activity. Have students read the questions they wrote before beginning the activity and answer them either by writing complete sentences and/or sharing with the class. Here are some other discussion starters: How could you tell the differences between the stages? What happens to the yolk, vitelline membrane, and the albumen?

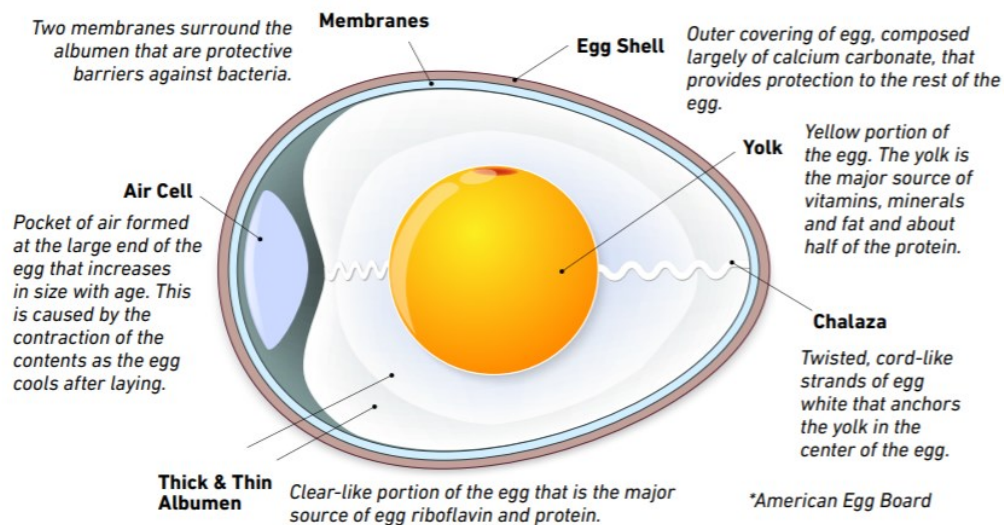
TEACHER RESOURCES

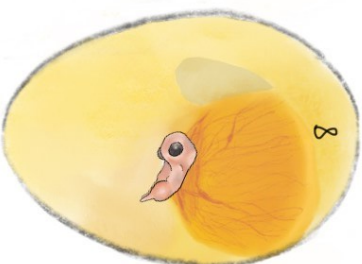
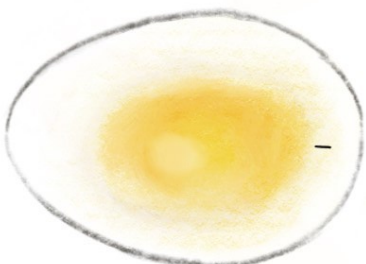
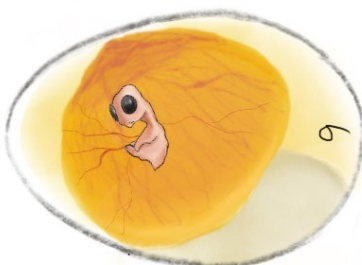
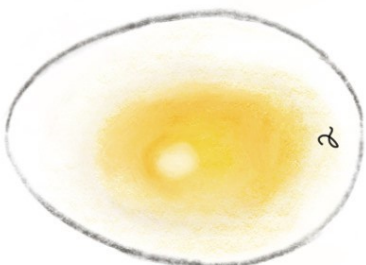
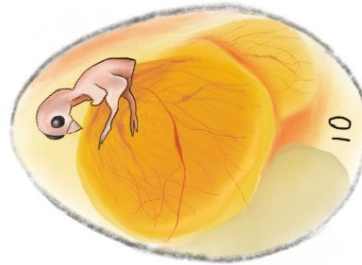
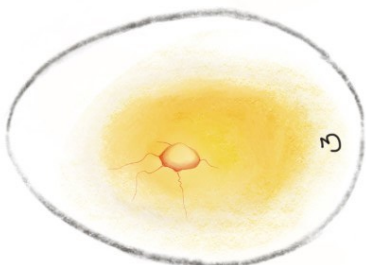
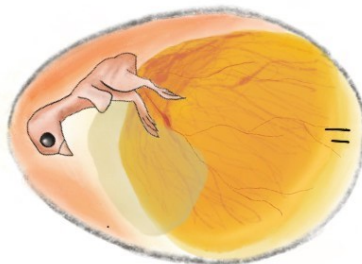
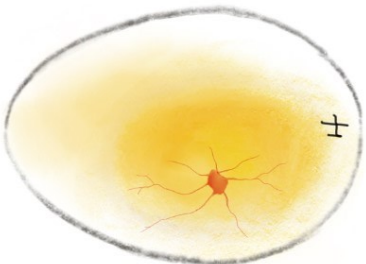
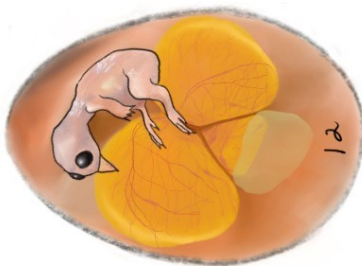
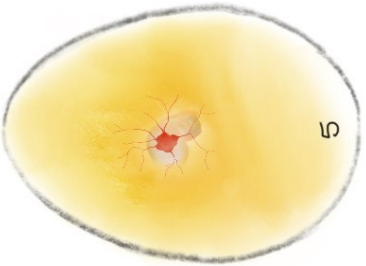
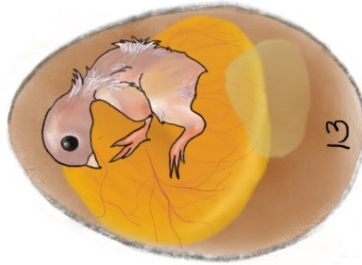
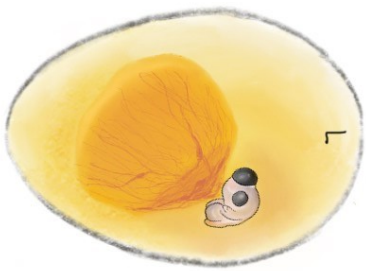
Background Information:

About 24 hours before a hen lays her egg, it must be fertilized by a rooster for it to become a chick. This process, called fertilization, forms a single cell that will begin to divide into 2, then 4, 8, 16, and so on! By the time the hen lays her fertilized egg, there will be hundreds of cells grouped together. These cells make a small, white spot, which can be easily seen on the surface of the yolk. The egg forms temporary organs that provide the embryo with nutrition, excretion, and respiration. These organs will continue to function until hatching time.

Extension Ideas:

- Have students make an “Embryo Egg-Venture” daily journal and record (write and/or draw) their observations each day.
- After the 21 days are over, talk about how the chicks crack open their shells from the inside!
 - What do chicks need to be healthy and safe once they hatch?
- If you’re not incubating eggs in the classroom, learn more about the importance of temperature and moisture control for embryo development.
- Watch [this](https://www.youtube.com/watch?v=DW3Tw5qpfZQ) video that shows the growth of the embryo each day. Video is available at <https://www.youtube.com/watch?v=DW3Tw5qpfZQ>
- Invite a chicken farmer or egg producer into your classroom.
- Watch a virtual field trip from the American Egg Board.
- Research what states produce the most eggs.
- Learn about different breeds of chickens!
- Have students share their favorite egg recipes and learn more about the nutrition of eggs and chicken.
- Have students strengthen their non-fiction literacy skills with our Ag-Venture with Poultry, 1-page activity sheet that pairs with our IAITC Poultry Ag Mag.
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!





- Egg tooth begins to appear
- Feather tracts appear

- Beak begins to grow
- Embryo separates from yolk sac
- Voluntary movement begins

- Elbows and knees appear
- Tongue, esophagus, kidney, and intestines begin forming

- Eye pigment begins
- Allantois begins forming

- Heart begins beating
- Ears begin forming

- Blood vessels appear
- Vertebrae forming
- Embryonic membrane forms

- Cells start dividing
- Germinal disc appearing
- Organ systems begin forming

- Embryo starts turning head towards large end of egg
- Bones begin to harden

- Body covered lightly with feathers

- Feathers are becoming visible
- Cartilaginous skeleton almost complete

- Tail feathers forming
- Scales on claws and toes appear

- Toe nails begin to grow
- Toes digits are formed and separated

- Embryo is starting to look bird-like
- Mouth opening appears

- Beak begins hardening
- Toe digits begin forming

- Yolk sac inside body
- Embryo begins breathing from the air cell, becomes a chick
- Hatching Begins

- Embryo occupies most of the space and pierces air cell
- Some lung functioning begins

- Growth of embryo nearly complete
- Intestines are now completely in the body

- Amniotic fluids decreasing
- Definitive feathers begin growing

- Down feathers cover body
- Albumen almost gone

- Intestines in yolk sac are drawn into abdominal cavity