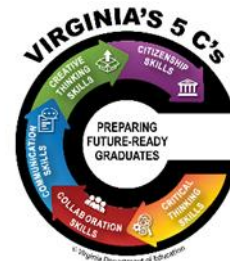




Eggciting Discovery: Fertile vs Infertile

Supplies: Eggs
 Paper plates
 Toothpicks
 Egg-Citing Discovery Scientific Inquiry Data Sheet
 Flashlight (optional as this will help identify fertility better)



VA SOL Correlation: K.1, 3.4, 4.1

5C: Critical Thinking

Life Skills: Critical Thinking & Learning to Learn

Age or Grade: 3rd-6th

Time: 20-30 minutes



Background: The study of the **embryo development** know as **embryology** creates an interesting way to educate youth on the role **fertility** plays in poultry production. Egg fertility plays a key role in chick development in addition to proper environmental conditions. Eggs that are infertile, or unable to produce a chick have undergone an unknown process that halted embryonic development. The **infertility** process can be a contribution on multiple things but typically stems from poor **humidity** at a given time IF the eggs are being housed in an incubator. This lesson will allow youth to identify a fertile egg from an infertile egg as well the other parts of an egg that protect and provide the embryo with nutrients during the developmental stages.

Project Goal: Short Term: To help youth identify if an egg is fertile or infertile as well as the parts of an egg.
 Long Term: Teach youth how fertility plays a role in embryonic development. Help youth understand how each designated section of the egg assists with embryo protection and development.

What to Do:



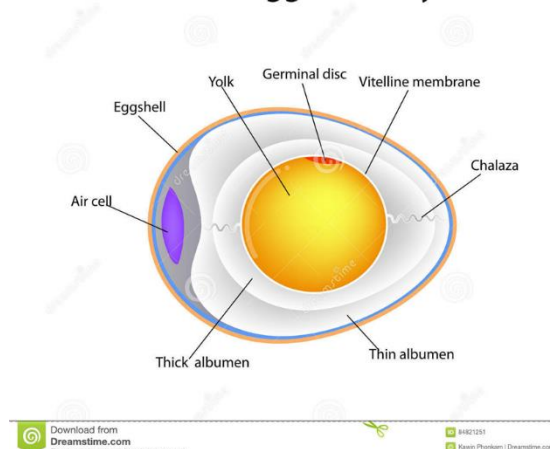
1. Select two eggs from home refrigerator or if you are able collect one egg from your chicken coop and use one egg from your refrigerator. If you are using an egg from the chicken coop, please make sure to rinse with warm water for 30-45 seconds to remove debris. (Ask for adult assistance if needed.)
2. Complete the *Egg-Citing Discovery Scientific Inquiry Data Sheet* found [HERE](#), as you work through your experiment. Happy investigating!
3. Place materials on table or countertop for investigative discovery. Materials should be place in the following order:





- 2 Paper plates side by side
 - 2 Toothpicks on the side of each plate
 - 1 Flashlight on the side to use later
 - Napkins (use as needed)
4. Carefully, pick up one egg to crack open over top of each plate. Make sure to remove any eggshells that may have fallen on the plate during cracking. You want to keep the egg fully intact (together) during the cracking process so you can indicate if it is fertile or infertile. Seek adult assistance if need be.
 5. Once, you have your eggs cracked and, on the plate, use your flashlight to find the germinal disc/blastodisc. This part of the egg will resemble the planet Saturn and have multiple rings IF it is fertile. IF the egg is NOT fertile or infertile, you will see a cloudy white dot on the surface of the egg.
 6. During part 2 of this egg-citing discovery experiment, you will need to use your toothpick to identify the following egg sections:
 - a) **Air Cell:** Located in the top of the egg to hold air.
 - b) **Albumen (Egg White):** Egg section that is clear before cooked and turns after cooking.
 - c) **Chalazae:** Extend from the yolk to the lining membrane; two spiral bands.
 - d) **Germinal Disc (Blastodisc):** Small, circular white spot on the egg yolk, AKA blastodisc.
 - e) **Membranes:** Lining; boundaries
 - f) **Vitelline Membrane:** Egg membrane
 - g) **Yolk:** Houses embryo and provides nutrients to developing embryo.
(These egg sections can also be used as embryology vocabulary words.)

Chicken Egg Anatomy



7. Once, you have completed the discovery activity, you are now cleared to clean up and disinfect your work space. Hope you had fun!





Reflect:

1. Where did my eggs come from? (store bought, chicken coop, one of each)
2. Were my eggs fertile or infertile?
3. Did I crack the egg in a way that allows me to identify ALL parts of the egg?

Apply:

1. What healthy meals can you create with eggs?
2. How much protein is in one egg?
3. Identify which chicken breeds produce white eggs, brown eggs, and blue eggs.

Notes for Parents or Helpers:

Check out different chicken breeds with your child to see what kind of eggs each breed lays. Create a chicken egg color collage and list the chicken breeds under the color of eggs they lay.

Going Further:

Challenge youth to identify yolk size difference between white, brown, or blue poultry eggs. Identify other egg laying animals and observe yolk size difference using online resources.

Author:

Brittany A. Council-Morton, 4-H/ANR Extension Educator
Edited by Dr. Erika Bonnett, VCE 4-H Program Development Extension Specialist



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