

## The Hen- “Eggs”pert Producer

**Subject Area:** Animal Science

**Unit Title:** Parts of an Egg

**Grade Level:** 4th & 5th

**Objectives:** To create an understanding of the different parts of an egg and their functions.

**Colorado Content Standards to be covered:**

### SCIENCE

**Standard III - Life Science:** Students know and understand the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment.

### Materials:

- sticky notes (or scraps of paper)

### Anticipatory Set:

Read the following statement and ask your students to write “true” or “false” on a sticky note. Hen-breeds with white feathers and ear lobes lay white eggs. Breeds with red feathers and ear lobes lay brown eggs.

### Input:

Make copies of attached handout showing the parts of an egg and go over the following parts and definitions:

### Key Vocabulary:

- 1. chalazae:** One of two spiral bands of tissue that connect the yolk to the lining membrane at either end of the shell.
- 2. shell membrane:** There are two different parts: the inner-shell membrane and the outer-shell membrane. The inner membrane is located just between the outer-shell membrane and the albumen, while the outer shell membrane lies just beneath the shell.
- 3. yolk:** The yellow and principal substance of an egg, the inner core
- 4. albumen:** The white of an egg
- 5. air cell:** A cavity containing air
- 6. shell:** The hard exterior of an egg
- 7. germinal disk:** A flattened, disklike region of cells from which the embryo begins to develop
- 8. vitelline membrane:** The membrane surrounding the egg yolk

Most of the eggs we eat come from chickens. Hens are female chickens. They are the ones that lay eggs. It’s an all day event for a chicken to make an egg and lay it...

1. The hen is born with many tiny yolks in her body. One at a time, these will grow to full size.
2. When a yolk comes to full size, it is released into a long tube called an oviduct. This release takes about 14 minutes.
3. As the yolk moves along, a thick white layer of albumen also known as the egg white, is placed around it. This takes about 3 hours.

4. The next stage takes about 1 hour and 15 minutes. Water is added to the albumen to form a thin layer of white.
5. The formation of the egg shell is the last and longest step. This step can take as long as 20 hours. A coloring, called pigment, is added to the shell at the very end of this step, making the egg shell white, cream or brown depending on the breed of the hen.
6. The hen lays the egg and the process starts over.

There are many types of eggs found in the supermarket. Some are large, some are small. Some are white, some are brown. Some eggs are called specialty eggs because they are grown or raised in a special way. Some of these specialty eggs include:

*Cage-Free Eggs*, are produced by hens raised in cage-free layhouses. They live in big layhouses and usually do not go outside. They are often fed all natural grains in cages, and they can go outside to scratch in the soil.

*Organic Eggs* are produced by free-ranging hens that can go outdoors and are fed only certified organic grain.

*Nutritionally Enhanced Eggs*

All eggs have high quality protein, vitamins and minerals. Egg farmers can change their hens' feed and change the fat levels and amount of nutrients in the eggs these hens produce. For example, DHA-Omega 3 fatty acids added to chicken feed increase this nutrient in eggs. Studies show that DHA-Omega 3 is important to maintain the health of our heart, blood vessels, nervous and immune systems. It also helps in the development and function of our brain and eyes.

Hens fed a special natural feed can produce eggs that have lower levels of cholesterol and saturated fat than regular eggs.

**Checking for Understanding:** At the end of this section choose one of the following for a quick check: ask the students to partner share and think, pair and share, do a quick 3 word write up as an exit slip, do a quick sketch or give each other a quick thumbs up or down to check for understanding. Determine the level of mastery for each student and provide individual remediation as needed.

**Procedures/Activities: Newspaper Activities**

***The Metaphorical Egg:***

Discuss the definition of these two expressions derived from the word “egg:” “EGG ON YOUR FACE” and “EGGHEAD.” Find 3 examples- in articles, photos, comics, or ads, of these expressions in today’s paper.

***Protein Sources:***

Review the examples of protein sources below:

Eggs contain the highest quality food protein known. It is so good that egg protein is often the standard by which all other proteins are judged. On a scale of 100 representing top efficiency, these are the biological values of proteins in several foods:

whole eggs	93.7%	soybeans . . .	72.8%
milk . . . . .	84.5%	rice . . . . .	64.0%
fish . . . . .	76.0%	wheat . . . .	.64.0%
beef . . . . .	76.0%	corn . . . . .	60.0%

As a class, come up with three additional sources. Find mention of any of these examples in today’s paper.

***Cholesterol Versus Fat:***

Review information below, then look in today's newspaper for any articles or ads that mention this issue. Don't forget the comics.

CHOLESTEROL is not fat. It is a fatty, wax-like substance found in every cell of animals, including humans. Our body uses, needs and produces cholesterol. Cholesterol is needed for the structure of cell walls and is needed by the body to produce vitamin D and to insulate nerve fibers. It also serves as the building blocks of hormones.

Dietary cholesterol, found in all foods from animals, does not automatically raise blood cholesterol levels. Usually your body produces less cholesterol if there is plenty available in the blood system.

Studies show that it is not the cholesterol in the food that causes most people problems, but the saturated fat found in foods. It is a good idea not to eat too many fatty foods. Here are some ways to cut fat:

The American Heart Association says, "An egg a day is okay."

- Choose skim or lowfat dairy products
- Choose lean meats and trim off fat
- Eat fresh fruit rather than cookies or candy
- Choose low fat snack foods such as soda crackers, pretzels, air popped popcorn or graham crackers.

Compare the information in a newspaper with that above.

***Activity:***

Bring a cookbook to class. Have students name food or food dishes (preferably something they ate recently; i.e., cake, French toast, mayonnaise, marshmallows, omelettes, etc.). Look up the recipes to see how many items contain eggs.

**Closure:** Review and clarify the key points of the lesson referring to the handout. Wrap up by talking about how white eggs are, indeed, produced by hens with white feathers and earlobes and brown eggs are produced by hens with red feathers and earlobes.