



FROM CHICKEN LITTLE TO CHICKEN BIG

Time required:

Two 45-minute class periods

Lesson Objectives:

Students will identify different breeds of chickens, examine physical characteristics and determine the stages of a chicken's life cycle.

Video Link:

www.lsuagcenter.com/agmagicagventuresnw

Materials Needed:

Activity 1: All About Chicken Genetics

- Chicken vocabulary list
- Genetic characteristics of chickens PowerPoint
- 1 set of chicken matching cards (pictures and descriptions) per group of students
- 1 blank chicken characteristics worksheet per group of students

Activity 2: Chicken Life Cycle

- Hen picture and life cycle cards
- Life cycle wheel text
- White paper plates
- Brass fastener
- Yarn
- Scissors
- Glue
- Hole punch
- Pen



Introduction

Chickens are thought to have come from wild fowl found in Southeast Asia; however, today, chickens are raised on farms for their meat and eggs. There are more than 113 different breeds, each with different genetic strengths and characteristics. Layer is a term used for a breed of chicken that is a very good egg producer. A laying hen can produce one egg per day after she reaches maturity. Broiler is a term used for a breed of chicken that is raised for their meat. Broilers grow quickly and are heavy, with a lot of muscle. Some breeds of chickens are not particularly good egg or meat producers, but are instead raised as pets, as a hobby or for shows. These are known as ornamental breeds. Raising chickens for eggs, meat or as a hobby is not new. It has been acknowledged that chickens were raised by people beginning more than 4,000 years ago.

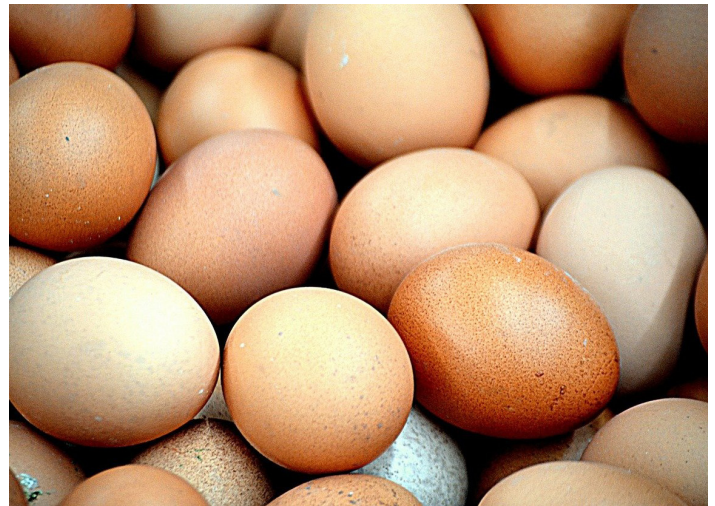
Chickens are essential to the agriculture industry in that Americans consume its meat more than any other meat-producing animal. Whether chickens are raised on large farms inside of chicken houses or small farms as free-range chickens, their history with humans has been one of an important food source that is less expensive to produce and purchase compared to pork and beef. Chickens' ability to produce both meat and eggs make them more diversified than other farm animals. Both broilers and layers are known to be omnivores, with a diet consisting of grain, seeds and insects. Chickens raised on large farms in chicken houses eat a prescribed diet of chicken feed and water. Chicken feed is a mixture of corn, grains, meat, fish, vitamins and minerals.

The top producing states of meat chickens in the United States are Georgia, Alabama, Arkansas and North Carolina. Poultry production is the largest animal agriculture industry in Louisiana. It is second only to forestry in gross farm value for all agriculture commodities. Total poultry farm value is estimated to be more than \$820 million in the state. Total economic impact of poultry producers in Louisiana is almost \$2 billion dollars. Eleven parishes in Louisiana have commercial poultry producers. They include Bienville, Claiborne, Jackson, Lincoln, Natchitoches, Ouachita, Sabine, Union, Vernon, Webster and Winn parishes. Louisiana has 95 pullet producers that raise more than 1 million pullets annually. There are 176 breeder flock producers that produce 19 million hatching eggs annually. There are 395 broiler producers that raise more than 890 million pounds of broiler meat annually. Also, 800 table egg producers sell \$17 million dollars worth of eggs each year.

As you learn more about and compare breeds of chickens, you will notice many different characteristics that are a result of genetic variation within the domestic chicken species. Skin color, feather color, feather patterns and textures, body size and eggshell color are all characteristics you can see. These are known as phenotypes. Some genetic characteristics you cannot see by simply looking at a chicken, but you can measure these traits by keeping good records. Examples include rate of growth and egg production. These characteristics are particularly important to poultry farmers. Farmers research the genetic characteristics of chicken breeds and choose the best breed or breeds for their farm.

The life cycle of a chick begins in an egg. Eggs that are produced for eating are not fertilized and will never form into a chick. Eggs that have been fertilized have the potential of developing into a chick if the environment is correct. Eggs can be hatched in an incubator or by a hen. If the process takes place naturally, the hen will lay a clutch of eight to 13 eggs by laying one egg per day for one to two weeks. Once she starts laying on the eggs, or brooding, it takes 21 days for the chick to develop and be ready to hatch. The mother hen keeps the eggs warm and only leaves the nest briefly to feed. The hen also turns the eggs several times per day to keep the embryo from sticking to one side of the shell. For a detailed lesson plan on egg development, see [Eggology](#). The same process can take place in an incubator. The eggs are maintained at the proper heat and humidity levels and turned every few hours for the duration of the 21 days until they hatch.

Once the chick has hatched and dried, it will be covered in a soft, fuzzy down. Within a few weeks as the chick grows, it will develop its adult feathers. In four to six months, the chicken will be fully grown. Hens will begin producing eggs around 5 to 6 months of age, and the cycle can begin again. Common breeds of chickens used for meat in the broiler industry grow very quickly. They can grow from hatch to harvest in as little as eight to 12 weeks!



Vocabulary Words

Breed: group of animals that share many of the same physical features; in chickens it can be combs, skin colors, feather colors and patterns

Brood: a group of newly hatched chicks

Chick: a young chicken, newly hatched

Hen: an adult female chicken of breeding age

Incubation: process of warming the chick eggs before they hatch for about three weeks

Poultry: domesticated fowl such as chickens, turkeys, ducks and geese

Rooster: an adult male chicken of breeding age



Activity

Activity 1: All About Chicken Genetics

Separate the students into groups with three to four children. Give each group a Chicken Vocabulary List and have them brainstorm what they think the vocabulary words represent. Have students define what they think the words mean and record the meaning in the space provided on the lists. If time permits, they can also draw a picture to represent the meaning for each word.

Once all of the groups are done have each group report the words with their definitions. Point out that list No. 1 shows types of chickens; list No. 2, physical features found in chickens; list No. 3, parts of the digestive system; list No. 4, chicken behaviors; and list No. 5, chicken housing needs.

Next, have each group write three sentences using a vocabulary word from their list in a sentence. These sentences can be assessed for definition accuracy as well as conventions.

Use the Genetic Characteristics of Chickens PowerPoint to teach students about the basic genetic characteristics found in various breeds of chickens. Explain that each breed of chicken has specific genes which indicate what it will look like, how many eggs it will produce, how large its body will be, etc.

As you go through the PowerPoint, explain that some genetic characteristics can be seen simply by looking at a chicken — for example, feather color, feather texture, type of comb, etc. However, other characteristics cannot be seen simply by looking at a chicken. These characteristics can be measured by farmers as they keep records. For example, a farmer can record how many eggs a hen lays or how much a chicken weighs.

With a basic introduction to chicken characteristics, your students are ready to learn about a few chicken breeds. Divide your class into groups and give each group a set of eight chicken pictures and a blank chicken characteristic worksheet. Have the students look at the pictures and identify the characteristics of the chicken that are associated with its appearance. They will record these characteristics in the box. Once they are finished have the groups share their characteristics for each chicken.

Compare each group's characteristics to each other. Are they similar or different? Were they able to identify feather color, egg color, feather texture, etc.? Were they able to determine if the picture represented a rooster, hen or chick?

Next, give each group one set of description cards. The students will match the description cards to the pictures. They should also be asked to compare their own written descriptions from step 3.

Review and summarize with students that an animal's genetics determine its physical characteristics (feather color, comb type, etc.) as well as its performance (egg or meat production). Ask your students to apply what they have learned by choosing the breed of chicken that would be best for each scenario below:

Imagine you are a chicken farmer, and you are raising chickens for their meat. Which breed would you choose?

The Cornish chicken (No. 3) is the best meat producing chicken

Imagine you are the manager of a layer farm. Your goal is to produce quality, white-shelled eggs. Which breed of chicken will likely be best for your farm to produce the most eggs?

The White Leghorn (No. 2) is the best choice. White leghorns are the most widely used breed in white-shelled egg production in the United States.

Imagine you are raising chickens in your backyard for a hobby and you'd like to learn how to show them. Which breed would you choose?

Students can choose any breed they'd like. Ornamental breeds such as the Cochon, Silkie and Polish Crested are raised mostly for their novel feathering patterns. Hens of these breeds do produce eggs, but not as efficiently as other breeds.

Imagine you are raising chickens for eggs and you'd like brown shells. Which chicken would you pick?

The Sussex, Rhode Island Red and Plymouth Rock all produce brown eggs. Be sure your students know that there is not a nutritional difference between white-shelled eggs and brown-shelled eggs. It is simply a consumer preference.



Ask the students questions that refer to the genetics of a chicken. If both parents are the same breed what would you expect the offspring to look like? If the parents are different breeds, what would you expect the offspring to look like? Compare the genetics of the chicken to humans. Ask the students, "What characteristics do you have that are similar or different from your parent(s)?" You can use the chicken pictures as a visual when asking these questions. Be sure to point out once again the similarities and differences found in the breeds.

Activity 2: Chicken Life Cycle

Ask the students if they can describe a living thing's cycle of life. Ask, "Do humans experience a life cycle? If so, what are the stages? If a chick takes four to six months to become an adult, how long does it take a child to become an adult?"

Tell the students that chickens and other birds have a unique life cycle that they will illustrate with their next class activity.

Using the hen picture and life stages cards and the following instructions, assist students in assembling individual life cycle wheels.

Using one plate facing down, punch the brad through the center of the plate. Cut out the hen picture and glue onto the center front of the plate over the brad.

Cut out each life stage card and punch a hole on the opposite end from the numbered tab approximately 1/2 inch from the edge of the card.

Tie each length of yarn to the brad knotting securely. Each yarn piece will attach to the brad in the center of the plate, radiate outward, and attach to an individual life stage card.

Have students write the correct text on the back of each life stage card. Use the attached document, life stage wheel Text.

Using the previously punched holes, tie one life stage card to the end of each length of yarn.

Stretch each length of yarn with card attached out past the edge of the paper plate. Space these equally apart around the circle of the plate. Make sure that the cards are numerically sequenced.

Place the second plate on top of the first plate, face down. The plates should "nest" one inside the other.

Using five staples, secure the plates together. Ensure staples are evenly spaced around the plate making sure there is room between the staples for one card to be pulled through each space in sequence.

Have students form pairs and demonstrate their life cycle wheels to one another.

Reflection

For homework, have students demonstrate and discuss their life cycle wheels with family, friends or neighbors. Upon their return to school, have students discuss their sharing experience.

After conducting these activities, review and summarize the following key concepts:

- Both chicken meat and eggs are produced by chickens on farms.
- Chickens grow through a life cycle just like other plants and animals. They begin their development inside an egg, they hatch approximately 21 days later, and then grow until they are mature.
- There are many breeds of chickens. Each breed has a different set of genetic characteristics.

References

Ag in the Classroom curriculum matrix



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