

# Embryology

## Hatching Alaska Chicks

*By Charlene Christensen*

This lesson integrates science, math, communication skills, writing skills, technology, and social studies through hands-on activities. Students are directly involved in hatching baby chicks.

**Materials:** Fresh fertilized eggs that aren't more than a week old, an incubator placed in a level area and out of any direct sunlight or draft, light source for candling, reference materials (encyclopedias, nonfiction and fiction books), brooder box with light source for heat, chicken feed and feeder, kitty litter or sawdust, water dish  
Locating eggs and incubators: fresh fertilized eggs can be obtained by calling Triple D Farm in Wasilla or checking on Craigslist for local eggs (cost from \$4-\$8 a dozen). Incubators can be purchased from Alaska Mill and Feed in Anchorage or Fairbanks.

### Learning Outcomes

Students will

1. Learn how to use an incubator to allow fertilized eggs to develop and hatch.
2. Study the parts of the egg, stages of development, and the needs of the developing embryo.
3. Observe the development of the chick by candling the eggs and will predict how many eggs they think will hatch.
4. Classify which animals are oviparous and which are not.
5. Provide for the needs of the newly hatched chicks.

### Pre-activities

Students clean the incubator and place water in the troughs for humidity. Temperature is adjusted to 99.5 degrees Fahrenheit for 24 hours prior to putting the eggs in the incubator.

Rules and procedures for using the incubator, handling the eggs, and safety precautions due to burner in incubator are discussed.

Students are assigned dates and times that they are responsible for turning the eggs, documenting temperature, and controlling humidity.

Students decorate cover of their embryology journals that they will record information in and also record their diary entries.

Students predict how many eggs will actually hatch. Teacher and students discuss the possibility that some or even all may not hatch. Students will need to be prepared for this.



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**Extended activities**

1. Before starting the project have the children make a list of things they already know about chickens plus a list of things they have questions about and what they want to know.
2. Read the children the story of The Diary of a Worm or any other diary type story. Then after reading books about the hatching of eggs and the stages of development, have the students write some journal, diary, entries as if they were the chick in the egg. They should be including some facts they have learned into their diary entries.
3. Students could draw the different stages of development for a poster display.
4. Older students could research different breeds of chickens and the types of feed that is available locally. The older students could include their drawings and pictures of the hatched chickens into their own PowerPoint presentations.
5. After reading Chickens Aren't the Only Ones by Ruth Heller, students could research other oviparous animals using nonfiction books and other reference materials, including use of the internet. Reading Rainbow also has an excellent video of Chickens Aren't the Only Ones.
6. For younger students they might enjoy making pop-up books, putting on plays of Chicken Little, Henny Penny, or The Little Red Hen.
7. After reading Patricia Polacco's book Rechenka's Eggs, the students could blow eggs and decorate the eggshells.
8. Older children make enjoy collecting recipes using eggs and making a classroom cookbook.
9. In math, in addition to using a thermometer, the eggs could be weighed, use graph paper and find the area of the eggs. This could be done with eggs from the grocery store that are not fertilized.
10. Discuss the needs of the baby chicks such as food, water, a clean and warm environment before the chicks hatch. Students should be informed that they will have a chance to make many observations of the newly hatched chicks, but the touching of little chicks must be done carefully and not frequently.
11. Be sure arrangements have been made for the chicks so that they can leave the classroom within a week of hatching.
12. Children would enjoy a field trip to the Triple D Farm which is Alaska's largest hatchery. Also students can view chicks hatching, newly hatched chicks, and many different breeds of chickens at the Alaska State Fair held in Palmer in August each year. A 4-Her or FFA member might be a guest speaker in your classroom and bring in some adult chickens or more information about raising of birds.



**Web site:** <http://lancaster.unl.edu/embryology/eggcamera.shtml>

**Suggested grade levels:** K-5

**Alaska Content Standards:** Science C2, English C 2-5

### **Introduction**

Did you know that an egg shell may have as many as 17,000 tiny pores over its surface? An average laying hen lays 257 eggs a year. A hen needs 24-26 hours to produce an egg and then 30 minutes later the process starts all over again. Sometimes a hen will lay a double-yolked egg. Eggs from a young hen are quite small when she first starts laying eggs. A young hen is called a pullet.

### **Procedure**

**Step #1** Always check the incubator to make certain the temp is holding at 99.5 to 103 degrees. Mark eggs with an X if turning by hand, which will be done 3 times a day. Adequate moisture must be kept in the incubator at all times. Always keep the moisture tray full. This insures that the proper humidity will keep the air bubble developing as it should. If using an automatic egg turner, be sure that the pointed part of the egg is pointed down.

**Step #2** On the first day and the last three days do not turn the eggs. Before candling or turning the eggs, the students should wash their hands good or wear gloves to handle the eggs to avoid contamination of the egg. After three days the eggs can be candled to make certain they are fertile. Candle by placing the egg over a flashlight in a dark room or over a candling device. If there is a cloudy spot or mass visible, it can be assumed that the egg is fertile. Do not candle after the 18th day. Students will be excited to see the development of the blood vessels, the eye which appears as a black spot, heartbeat, and movement of the chicks. All clear eggs should be removed from the incubator.

**Step #3** Throughout the activity, students record observations and predictions of hatch in their individual journals. Be sure to include candling observations. Students can also include informational facts in their journals that they have learned from reading nonfiction books about chickens as well as writing poems about chicks.

**Step #4** Students can also draw, label, and color the parts of an egg and the parts of a hen in their journals. The function of each part should also be discussed.

**Step #5** On the 19th day of incubation the eggs should be removed from the automatic turner if one is being used. Eggs should not be turned the last three days of incubation (days 19-21).

**Step #6** Do not be in a hurry to remove the hatched chicks from the incubator. Newly hatched chicks can survive up to 3 days without food or water since the yolk of the egg is still providing nourishment for the transitional period from the time the chick hatches until it is fluffed out and ready to eat on its own. I would remove the chicks from the incubator after 24 hrs of hatching.

**Step #7** Provide the chicks with a dry warm place with food and water available at all times.

**Step #8** Always take pictures of your students working with this project throughout the whole 21 days.

**Assessment**

Teacher observation is an important part of the assessment of this unit. Their research assignments and individual journals can be assessed as well. Any student presentations of written work, PowerPoints, or posters can be assessed.

**Personal success with this unit**

I have had great success with this project with many of my classes in the past 42 years of my teaching. In rural classrooms I have had students get their own incubators and hatch their own chicks at home. One time a student wrote to me the following year telling me about how many chickens she had hatched along with how many the family ate and how many hens she had kept to provide eggs for her family and even had some eggs to sell. In urban schools it was the first time that most students had even seen chicks hatching or the first time they had ever had the opportunity to touch a chick. I have had the eggs hatching at parent-teacher conference time, which always encourages the students to be sure their parents come to school to see their science project.

It is of great importance to have plans ahead of time for the chicks because the children will always want to take them home with them. Safety is a big issue with using a heat lamp over the chicks after they have hatched. I have included many different activities that can be used with this project. Try as many as you can and have fun with this project.