

After Dinner Science: Crafting a Candler



What is a Candler?

Have you ever wondered what was inside an egg? You can discover the answers by using a **candler**! A candler is a light that we put gently against an egg. It lights up the egg so we can see inside. Before there were electric light bulbs, farmers would light wax candles and use the burning flame to see inside the eggs. Now, farmers use electric candler that are much safer. Candler have changed quite a bit over the decades. Some candler look like big contraptions with lights to put the egg in, while others are as small and simple as a flashlight.

Why do you think candling eggs is important?

Candling lets farmers make sure whether an egg is **fertilized** or not since a chick can only grow in a fertilized egg. Farmers can use candling to make sure the **embryo**, or unborn chick, is healthy, happy, and growing inside its shell.

Farmers do not want to waste valuable **incubator** or nest space trying to hatch a chick out of an **unfertilized** egg. Farmers usually sell unfertilized eggs, so they want to make sure any unfertilized eggs are safe for people to eat. No one wants to bite into a rotten egg, and no farmer wants to clean up the mess a rotten egg can make in an incubator or a nest.

Read

An Egg Is Quiet by Dianna Hutts Aston

The Experiment

Create a homemade candler with everyday items like cell phones, boxes, and flashlights. Use your candler to observe what is happening inside your eggs.

The best candler will allow you to see more features of the chick inside of the egg.

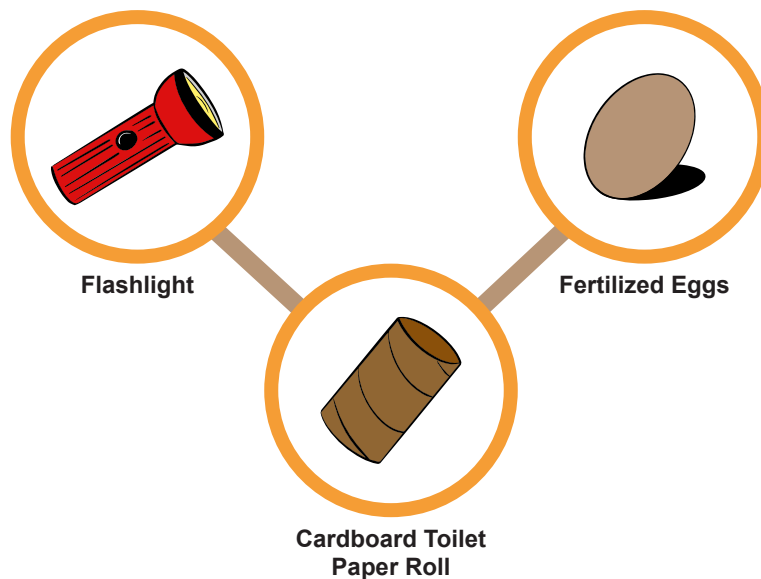
Did it work? Which version of the candler gave you the best view of the inside of the egg? Why do you think that candler worked the best?

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Materials:

- A light, such as a flashlight or lightbulb. It should be something bright but not hot.
- Materials such as cardboard toilet paper rolls, egg crates, rolls of ribbon, paper, tape, or anything you think you might need to hold the egg in place.
- Eggs



Note: If you do not have access to fertilized chicken eggs, call your County's 4-H or Livestock Agent at the County's Cooperative Extension office and they can assist you. If farm eggs are not an option, you can use eggs from the store to test your candler. These eggs will be unfertilized, so you will be able to see the egg yolk but not a developing embryo.

Directions

1. Decide on what you will use for light.
2. Build something that will direct the light into the egg and hold the egg still and safe.
3. Put your egg on your homemade candler to see if your design is something to crow about!
4. Choose one thing to change that you predict will make your candler better.
5. Make the change and test the new version.

At the beginning of the embryo's development you should see more light passing through the egg, as development continues the air cell should decrease in size and the eyespot and veins can be seen. Sometimes movement and/ or features such as a foot, beak, wings or feathers can be observed. As the embryo grows and takes more shell space, less and less light should be able to shine inside the egg.

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Dinner Talk

- What materials made the best candler?
- What light source worked best?
- What are the similarities and differences between your candler and the candlers that farmers used in the past?
- What were you able to see inside of your egg by using your candler?

Extra Enrichment

Try using your best candler with different amounts of light (natural or electric) in the room, with different color egg shells, and at different points during **incubation**. Is it easier to see through the egg shell in a dark candling room or a candling room with lots of light? Is it easier to see through an egg with a lighter colored or darker colored shell?

Glossary

- **Candler:** A light that we put gently against an egg so that we can light up the egg and see inside.
- **Embryo:** The chick that is growing inside of the egg.
- **Fertilized:** An egg with a baby chick inside.
- **Incubator:** An insulated box with a heater to keep the embryos warm (about 99.5-100.5°F).
- **Incubation:** Keeping the chicken eggs warm so they will grow and hatch.
- **Unfertilized:** An egg without a baby chick inside.



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