

# CHICK EMBRYOLOGY – LESSON 2

## Time Needed

- Pre-test, if given, should take 10 minutes.
- Time for discussion will depend on age, knowledge base and experience of the students can vary from 15-30 minutes.

## Skill/Grade Level

- Can be adapted for K-12 students

## Core Area

- Agriculture
- Animal production

## Life Skills

- Participation in group discussion
- Sharing experiences and ideas

## Educational Standards

- AB4 – Record information accurately and completely
- EA5 – Take and provide direction
- ED1- Plan and follow a work schedule



## Objectives/Outcomes

- To have the students set up the incubator in the classroom
- To have the students collect the initial data for the project (egg weights)

## Introduction to Content

This activity is the start of the embryology project with the setting up of the incubator and adding the fertile eggs. The use of an automatic turner will improve hatchability and reduce the daily time commitment to care for the incubator.

**Optionally**, students can be involved in turning the eggs on school days, and that the egg turner be used on the weekends when no students are around. This makes it unnecessary for teachers to come in routinely over the weekend. It is recommended, however, that someone check on the incubator daily to verify the temperature and fill the water pans to maintain the humidity in the incubator.

## Background Information

Refer to the leaders manual for background information on the operation of a force-air incubator.

## Materials Needed

- Incubator
- Water
- Thermometer
- Location for the incubator
- Electrical outlet with consistent electricity and extension cord if necessary
- Pencil
- Record sheets
- Scale to weigh eggs

Learn more at [www.kentucky4h.org](http://www.kentucky4h.org) or contact your county extension office.



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## Getting Ready

### ***Two days before the eggs are delivered:***

- 1. Chose location for incubator
- 2. Plug in incubator at least two days before eggs arrive
- 3. Fill the pan with water
- 4. Lay the thermometer in the wire rack where the eggs will be, making sure to not interfere with the operation of the automatic turner
- 5. Close the incubator
- 6. Make sure the light turns on initially
- 7. If the light does not turn on, turn the bolt on outside of incubator in the hot direction until the light does turn on
- 8. Monitor the temperature checking every half hour to make sure the incubator is getting warm
- 9. When the temperature reaches 98°F, screw the nut tight at that setting
- 10. Continue to monitor temperature to make sure it remains a constant temperature

## Activity – adding the eggs to the incubator



### ***When eggs are delivered:***

- 1. Number each egg with a pencil in the large end of an egg

### ***OPTIONAL – If using manual turning during school days***

- 2. Mark and X on all the eggs with a pencil
- 3. Mark an O on the other side
- 4. Mark an arrow coming from the X-mark on one side
- 5. Weigh and record the weights of each egg
- 6. Refill water tray if needed
- 7. Close the incubator
- 8. Monitor temperature – it will have dropped from opening the incubator and will need to climb back up to between 98-100°F

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## CHECK LIST – Daily activities

### **Daily activities**

- 1. Record the temperature of the incubator on the record sheet for daily activities.

### **OPTIONAL – If using manual turning during school days**

- 2. In the morning, open the incubator and turn the eggs (from X to O if the X is up rotating the egg in the direction of arrow, and O to X in the opposite direction of the arrow if the O is up) and indicate that they eggs have been turned on the record sheet.
- 3. Fill water trays if necessary.
- 4. Close the incubator and confirm the temperature a half hour later

### **OPTIONAL – If using manual turning during school days**

- 5. At noon repeat steps 1-4
- 6. Before the end of the day repeat steps 1-4

### **Periodic activities – Egg weight**

- 1. Every three days, once that day, you should record the weight of each egg at the same time as turning the eggs
- 2. Quickly weigh each egg and record the weights
- 3. Turn the eggs as scheduled
- 4. Close the incubator and monitor temperature periodically until it reaches the correct temperature

### **Periodic activities – Candling the eggs**

- 1. Every three days you should candle each egg (this can be at a different time as eggs are weighed)
- 2. Quickly candle each egg and indicate on the record sheets if the eggs are infertile or if the embryo is dead
- 3. Close the incubator and monitor temperature periodically until it reaches the correct temperature

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## Share/Process/Generalize (Reflect)

**Share:** What did you learn?

**Process:** What part of the activity taught you the most?

**Generalize:** What was the most important thing you learned?



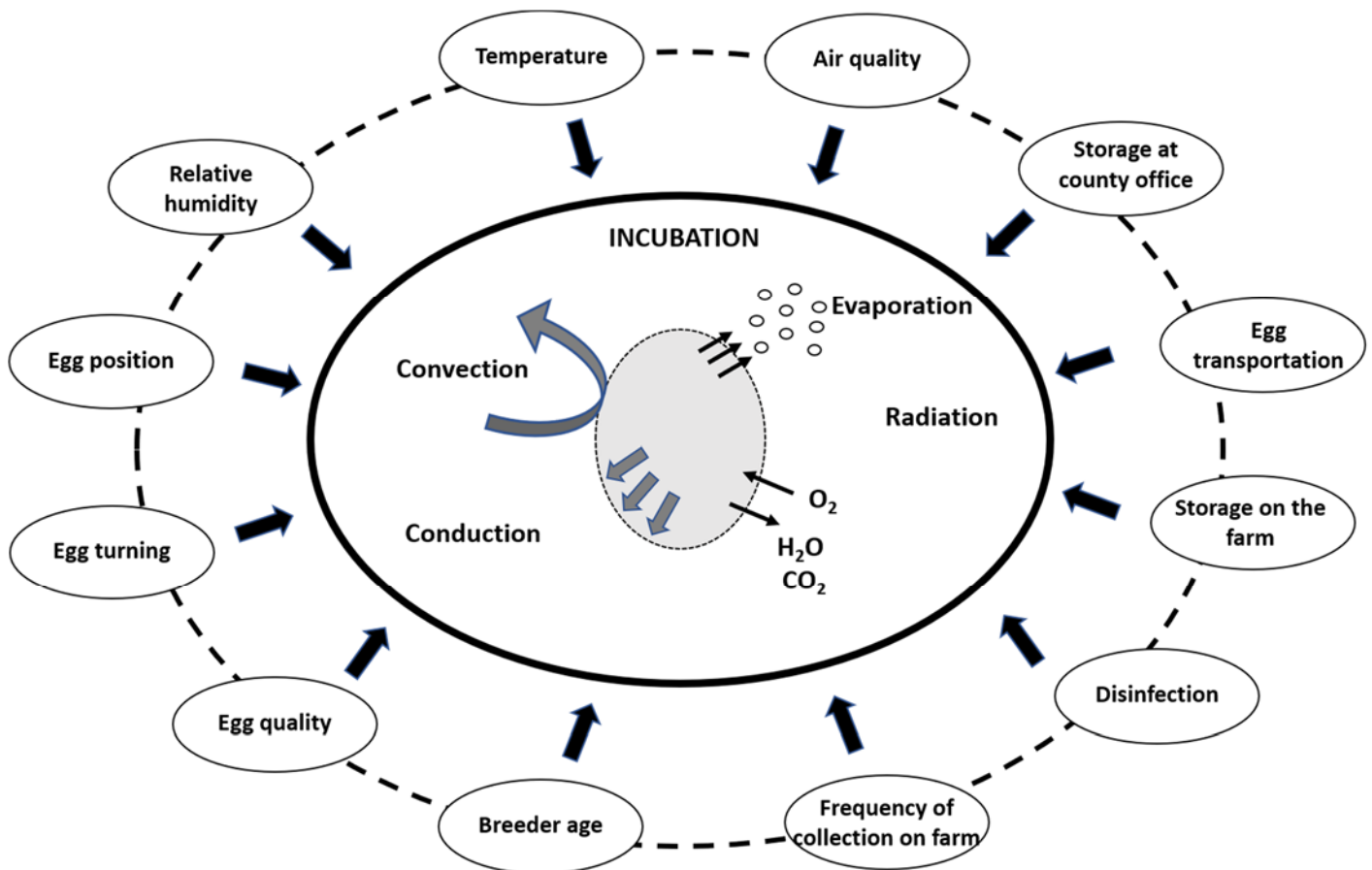
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PHYSICAL EXCHANGES OF THE EGGS WITH THE ENVIRONMENT SHOW FACTORS THAT IMPACT HATCHABILITY



Source: Boleli et al., 2016. Poultry egg incubation: Integrating and optimizing production efficiency. Brazilian Journal of Poultry Science Special Issue 2 Incubation 001-019.