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STEM/STEAM

**Eggs in the
Classroom**

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Quails in the classroom

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Supplies & Materials

Itemized List of Supplies:

- **Classroom Incubator:** \$70–\$120 (Available at Amazon / Brinsea)
- **Fertilized Quail Eggs:** \$30–\$50 per dozen (Local farm / Online hatchery - Ms. Arroyo)
- **Candling Light:** \$10–\$20 (Available at Amazon)
- **Brooder Box (Plastic Bin):** \$20 (Available at Walmart)
- **Heat Lamp/Brooder Plate:** \$30–\$50 (Available at Tractor Supply)
- **Chick Feed & Waterers:** \$20 (Available at Pet Store)
- **Bedding (Pine Shavings):** \$10 (Available at Home Depot)
- **Composition Journals:** \$1 each (Available at Dollar Tree)



Goals and Objectives

This project provides students with an authentic, hands-on opportunity to observe and understand the life cycle of quails, while also strengthening core academic skills across subject areas. The goals and objectives extend beyond science to include math, reading, writing, and social-emotional development.

Science Goals

- Students will understand the **complete life cycle of a bird**, from egg to chick to adult.
- Students will identify the **basic needs of living organisms** (air, water, food, shelter, temperature control).
- Students will develop **scientific inquiry skills** by making predictions, conducting observations, recording data, and reflecting on outcomes.
- Students will recognize how **humans impact animals' survival** through responsible caretaking.

Mathematics Goals

- Students will **collect, organize, and represent data** (temperature, hatch predictions, chick growth).
- Students will create and interpret **charts and graphs** to show hatch rates and chick development over time.
- Students will practice **measurement skills** by weighing and recording chick growth.
- Students will apply **basic operations** when comparing egg counts, hatch rates, and weekly weight gains.

Language Arts Goals

- Students will strengthen their **reading comprehension** by engaging with informational texts about birds, quails, and life cycles.
- Students will develop **writing skills** by keeping a science journal, recording daily reflections, and writing final reports or chick biographies.

- Students will build **speaking and listening skills** by participating in group discussions, sharing predictions, and presenting findings at the “Chick Showcase.”
- Students will expand their **vocabulary** with science-specific terms such as “embryo,” “incubation,” and “brooder.”

Social -Emotional & Character Education Goals

- Students will cultivate a sense of **responsibility** by participating in the daily care and observation of living animals.
- Students will develop **empathy and compassion** as they witness and reflect on the needs of fragile, newly hatched chicks.
- Students will experience the value of **teamwork and collaboration** when working together on prediction charts, care rotations, and shared observations.
- Students will foster **curiosity, patience, and perseverance** by observing gradual changes over time and reflecting on the wonder of new life.

Overall Objective

By the end of the project, students will not only gain a clear understanding of the **science of life cycles** but will also have practiced critical academic skills, nurtured their sense of wonder, and built lasting connections between classroom learning and the natural world.

Florida Standards

- Science: SC.1.L.14.1 – Make observations of living things.
- Science: SC.2.L.16.1 – Observe and describe major stages in the life cycles of plants and animals.
- Science: SC.3.L.15.1 – Classify animals based on characteristics.
- Math: MA.1.DP.1.1 – Collect, represent, and interpret data.
- Language Arts: ELA.K12.EE.1.1 – Cite evidence to explain and justify reasoning.
- Language Arts: ELA.1.C.1.2 – Write narratives and explanatory texts using details.

Course Overview

Duration: 3 Weeks

Overview

Over the course of three weeks, students will have the opportunity to engage in a hands-on learning experience by incubating quail eggs, observing their development, and nurturing the chicks once they hatch. This comprehensive and interactive project is designed to teach students about the life cycle of birds, particularly quails, while involving them in a variety of educational activities.

Key activities in this engaging project include:

- **Creating Prediction Charts** : Students will predict the hatch dates and outcomes based on initial egg observations. These charts will help them understand factors that influence hatching, such as temperature and humidity levels.
- **Drawing Candling Illustrations** : By using a technique called candling, students will observe the development of embryos inside the eggs. They will sketch detailed illustrations to document the growth stages and changes they see.
- **Collecting Data** : Throughout the project, students will gather data on temperature, humidity, and other environmental conditions within the incubator. This data collection will help them analyze the impact of these variables on the hatching process.

- **Writing in Journals** : Students will maintain personal journals to record their daily observations and reflections. This practice not only enhances their scientific writing skills but also encourages them to think critically about the biological processes they are witnessing.
- **Participating in a Final “Chick Showcase”** : At the conclusion of the project, students will present their findings and experiences in a “Chick Showcase.” This event will allow them to share their knowledge with classmates, teachers, and parents, showcasing the chicks they've nurtured and the insights they've gained throughout the project.



Sample 3-Week Lesson Plans

Week 1: Introduction & Egg Setup

Day 1 – Life Cycle Kick-Off

- Objective: Students understand animals that hatch from eggs.
 - Materials: Book (From Egg to Bird), chart paper, markers.
 - Activities: Read aloud and discuss animals that lay eggs. Brainstorm oviparous animals.
- Journal entry: 'What do I think is inside an egg?'

Day 2 – Introducing Quails

- Objective: Students learn about quails and their habitats.
- Materials: Photos/videos of quails, map.
- Activities: Show quails in the wild. Locate regions on map. Compare to other birds.

Day 3 – Setting Up the Incubator

- Objective: Students understand incubation conditions.
- Materials: Incubator, fertilized eggs, thermometer, hygrometer.
- Activities: Teacher demonstrates incubator setup. Students help place eggs. Start data chart.



Day 4 – Predictions & Data Charts

- Objective: Students make predictions about hatch rates and timing.
- Materials: Prediction worksheet.
- Activities: Students predict how many eggs will hatch and when. Begin wall chart.

Day 5 – Reflection & Writing

- Objective: Students summarize what they've learned so far.
- Activities: Journal entry: 'My hopes for our quail eggs'. Class discussion: Why do we need to care for the eggs?

Week 2: Development & Observation

Day 6 – Candling Introduction

- Objective: Students learn how to observe embryos safely.
- Materials: Candling light, darkened room.
- Activities: Teacher models candling. Students observe. Draw in Development Log.

Day 7 – Scientific Journaling

- Objective: Students record accurate drawings.
- Materials: Embryo logs, pencils.
- Activities: Students sketch and label drawings with date and egg number.

Day 8 – Comparing Animal Life Cycles

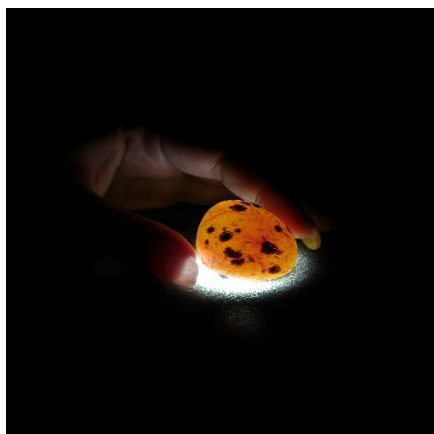
- Objective: Students compare quail life cycle with frogs/butterflies.
- Activities: Create Venn diagram. Group discussion.

Day 9 – Candling #2

- Objective: Students track embryo changes.
- Activities: Candle eggs again (Day 10). Draw and describe changes. Update classroom chart.

Day 10 – Math Connection

- Objective: Students represent hatch predictions in graphs.
- Activities: Class bar graph of predicted hatch rates. Practice tallying.



Week 3: Hatching & Care

Day 11 – Hatching Anticipation

- Objective: Students prepare for hatching.
- Activities: Review conditions needed for hatching. Journal entry: 'How I will feel when the chicks hatch'.

Day 12 – Hatching Observation

- Objective: Students witness live hatching.
- Activities: Quietly observe hatching in small groups. Record in journals.

Day 13 – Caring for Chicks

- Objective: Students learn basic chick care.
- Materials: Brooder, feed, waterers.
- Activities: Teacher models feeding and watering. Assign students to care chart.

Day 14 – Growth Measurements

- Objective: Students measure and record chick growth.
- Materials: Scale, growth chart worksheet.
- Activities: Weigh chicks and record data. Begin growth graphs.

Day 15 – Reflection & Showcase Prep

- Objective: Students reflect on project and prepare showcase.
- Activities: Journal entry: 'What I learned from the quails'. Create posters/flipbooks for showcase.



Worksheet 1: Hatch Prediction Chart

Directions: Predict how many eggs will hatch and on which day. Record your predictions below.

Student Name	Predicted Number of Eggs	Predicted Hatch Day

Embryo Development Drawing Log

Directions: Draw what you see when candling the egg. Label your drawing with the day.

Day	Observation Notes	Drawing Space
Day 1		
Day 2		
Day 3		
Day 4		
Day 5		
Day 6		

Day 7		
Day 8		
Day 9		
Day 10		
Day 11		
Day 12		
Day 13		

Day 14		
Day 15		

Worksheet 3: Chick Growth Graph

Directions: Record the weight of your chick each week and plot the data on the graph.

Week	Weight (grams)	Notes
Week 1		
Week 2		
Week 3		
Week 4		

Worksheet 4: Chick Care Rotation

Directions: Use this chart to assign student caretakers for feeding, watering, and cleaning duties.

Date	Student Name	Duty	Completed?

All About Quails



Quails are small, ground-dwelling birds. They have round bodies, short tails, and make soft “coo” or “whistle” sounds. Even though quails can fly, they prefer to run quickly to escape danger. Quails are famous for their tiny speckled eggs. These eggs are cream, brown, or even blue with spots. A mother quail can lay many eggs during spring and summer. Sometimes teachers use incubators in classrooms to hatch quail eggs so students can watch the life cycle. When baby quails hatch, they are covered in soft fluff. They can walk, run, and peck at food almost immediately. This makes them very different from baby songbirds, which must stay in the nest and wait for their parents to feed them. Quails eat seeds, grains, grass, and small insects. They live in grassy fields and bushes, where their brown feathers help them stay hidden. Quails are also social birds. They like to stay in groups called “coveys,” especially in the wild. Quails grow quickly, and within just a few weeks, the fluffy chicks begin to look like adults with shiny feathers. Even though quails are small, they are clever survivors in nature.

Comprehension Questions

1. What do quails usually do when they sense danger?

- a) Fly high into the sky
- b) Run quickly on the ground
- c) Hide in trees
- d) Stay very still in a nest

2. What are groups of quails called?

- a) Herds
- b) Coveys
- c) Packs
- d) Swarms

3. What color are quail eggs?

- a) Pink with stripes
- b) Cream, brown, or blue with spots
- c) Solid white only
- d) Green

True or False

4. Quail chicks cannot walk when they hatch.
5. Quails prefer to spend time in the air.
6. Quails live in grassy fields and bushes.

Short Answer

7. Name two foods that quails eat. _____
8. How are quail chicks different from baby songbirds? _____
9. Why do teachers sometimes use incubators for quail eggs? _____
10. What helps quails hide from predators in the wild? _____

Extended Thinking

11. Why do you think quails like to stay in groups (coveys) instead of being alone? _____

12. If you were raising quails in the classroom, what would you need to do to keep them safe and healthy?_____

13. Draw and label a picture of a quail with its eggs and habitat.



14. Imagine you are a baby quail that just hatched. Write 3 sentences about your first day outside the egg.

Videos

https://youtu.be/PedajVADLGw?si=U_jZILNQVUTOd4sj

This video is an excellent resource that I regularly shared with my students. It vividly illustrates the fascinating development of a chick, capturing their attention and enhancing their understanding of the biological process.

Quail Incubation Project – Teacher Resource

This packet provides resources, guides, and activity materials for teachers interested in incubating and hatching quail eggs in the classroom. It includes curriculum guides, how-to manuals, printable student journals, and tips for managing the project successfully.

Lesson / Curriculum Guides

4nH Embryology: Hatching Quail Resource Guide (NC State) – Full PDF guide specific to quail: incubation timeline, care, classroom tips.

<https://www.ces.ncsu.edu/wp-content/uploads/2014/02/4-H-Embryology-Hatching-Quail-Resource-Guide.pdf>

Incubating Quail Eggs – Henderson County 4nH – Classroom program example: supplies, daily logs, safety.

<https://henderson.ces.ncsu.edu/2022/03/incubating-quail-eggs/>

A Complete Guide to Incubating and Hatching Quail Eggs – Practical how-to with photos and teacher-friendly explanations.

<https://www.anordinaryexistence.com/a-complete-guide-to-incubating-and-hatching-quail-eggs/>

NC 4nH Embryology Quickstart Guide – Checklist style guide with turning, candling, and hatching steps.

<https://www.ces.ncsu.edu/wp-content/uploads/2023/08/4-H-Embryology-Quickstart-Guide-v7.pdf>