Chicken Embryology in the Classroom

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One of the greatest miracles of attire is the rapid transformation of a seemingly lifeless egg into a new living organism. Egg hatching provided a rare opportunity to study the stage of embryonic growth during the 21 days of incubation and gives students a chance to relate the stages of chick development to that of other embryos.

Although chick embryos start to develop as soon as they are formed in the hen's body, many things con affect their speed of growth and the ability to form healthy chicks. Variations in temperature ca have a large impact on the growing embryos. Growth will temporarily or permanently cease if the temperature drops below 96°F or above 103°F. Too much or too little humidity can result in weak embryos or a reduced number of chicks that are able to hatch.

This lesson will help guide students through the process of controlling several environmental variables during the

incubation process as they watch the growth and development of chick embryos I the classroom.

$20.00 for 12 eggs & an incubator

Targeted Grade Levels: Kindergarten-12th grade

Availability: The beginning of each Month, except in July.

Observation Length: 4 weeks

Extension Office Provides: One dozen hatching eggs, online resources, online detailed Instruction videos, incubator, and other educational material notebook, brooder, shavings, heat lamp, feeder, chick feed and waterer once chicks have hatched.

Over four weeks, students will learn about embryology development through observing the 21-day incubation period while getting a chance to hatch their chicks.

An embryology lesson can be taught by an Extension professional at the request of the teacher.

School Standards:

Elementary School (Grades K–5)

Kindergarten:

- **K-LS1-1**: Use observations to describe patterns of what plants and animals (including humans) need to survive.Kansas State Department of Education

Grade 1:

- **1-LS1-1**: Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.
- **1-LS3-1**: Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.The Wonder of Science

Grade 3:

- **3-LS1-1**: Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.
- **3-LS3-1**: Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.
- **3-LS3-2**: Use evidence to support the explanation that traits can be influenced by the environment.

Grade 4:

- **4-LS1-1**: Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.The Wonder of Science

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Middle School (Grades 6–8)

- **MS-LS1-4**: Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.
- **MS-LS3-1**: Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.
- **MS-LS3-2**: Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.

High School (Grades 9–12)

- **HS-LS1-4**: Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.
- **HS-LS3-1**: Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.

- **HS-LS3-2**: Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.
- **HS-LS3-3**: Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.