

4-H Embryology Program

A hands-on approach to learning science

Situation

According to the National Assessment of Educational Progress, only 38 percent of U.S. fourth graders are proficient in science. And, when compared to the nation, New Mexico's average scores were among the ten lowest.



25% proficient
↓
12% below national average



Extension's Response

Since 2013, Doña Ana County's youth development agents have explored life cycles and life science with elementary and middle school students through classroom embryology projects. For 21 days, fertilized eggs grow in an incubator provided by the Extension Office, until baby chicks hatch. Once hatched, chicks remain in the classroom for one to two weeks before they return to a farm or are adopted as a 4-H poultry project.

During incubation, students explore embryo development by candling eggs, a process that involves shining a very bright light through the egg to see whether the embryo is developing as it should. Students are tasked with making sure the incubator conditions are optimal for embryos to develop and hatch and are asked to record that on a daily basis.

Doña Ana County agents provide the incubator, fertile eggs, a chick life cycle kit, two hours' classroom instruction, feed, feeder, water container and heat lamp all at no charge. The curriculum used by the agents supports the 4-H Science, Technology, Engineering and Math initiative.

Since 2013, Doña Ana County agents have educated more than 3,538 students about embryology through the 4-H egg to chick project.

Results

Doña Ana County agents believe that through this program, students are increasing their scientific knowledge and gaining a greater appreciation for agriculture. To verify this outcome, a survey was given to all 258 students who participated in the Egg to Chick embryology project in 2018.

Students indicated that as a result of this program, 73% of students strongly agreed that they felt more comfortable learning science and 78% strongly agreed that they learned that agriculture was important to them. Of those 258 students, 185 or 73% of them indicated that they wanted to raise their own chickens at home.

When asked, what is at least one thing you plan to do because of this program; one student answered, "*do more science experiments!*", another responded "*learn more about animals and become a wild animal vet.*"

Embryology is about learning through experience. Students see firsthand:

- how a chicken develops in an egg through a series of activities
- observe the growth from candling sessions that show the development of the chick;
- record data,
- make predictions, and
- conclude what they think the final outcome will be.

Most importantly, students hatch chicks in the classroom and witness the exciting miracle of life.

Overall, students:

- Become more excited about science
- Gain more knowledge of life science
- Become more responsible during the project
- Learn respect and compassion

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SHOW ME AND I MAY
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