**University of Illinois Extension**

*4-H Incubation and Embryology 2014 Results*

*Teacher – Regional Report*

*Grades 3-12*

**Introduction**

The 4-H Incubation and Embryology project is designed to provide teachers with background information and exciting experiential activities dealing with life science for use in the classroom. Children have a natural sense of curiosity about living things in the world around them. Building on this curiosity, students can develop an understanding of biology concepts through their direct experience with living things, their life cycles, and their habitats. Students also get the opportunity to develop life skills related to science processes such as teamwork, recordkeeping, planning, and organizing.

**Participants**

Fifty-eight (58) teachers teaching grades 3-12 from schools in ten counties in Northeastern Illinois responded to the 2014 4-H Incubation and Embryology survey. A reported 4793 students from those schools were involved in the program in 2014. More than four-fifths (82%) of the teachers had students who were enrolled in grades 3-7. Another 13% reported that they taught multiple grade levels. Twenty-two percent (22%) of the teachers were participating in embryology for the first time while 47% reported being involved for five-plus years. All of the teachers who answered the question reported that they would participate in this project again.

**Incubation Process and Hatch Rate**

Teachers reported setting an average of 30 eggs and had an average hatch rate of 15 eggs. (Fifty percent hatch rate is considered excellent.) Nearly four-fifths of the teachers candled eggs during the incubation period and candled an average of 20 eggs during the program. Teachers reported on average that two (2) chicks pipped the shell but did not hatch. Sixty-two percent (62%) of the teachers reported opening the eggs that did not hatch, while 38% reported that they did not open the eggs.

Eighty-eight percent (88%) of the teachers used an automatic egg turner. For those classrooms that did not have a turner, the eggs were turned on average 3 times per day (eggs should be turned three times per day), and all of the teachers reported turning the eggs on the weekends. All of the teachers reported keeping water in the incubator for humidity while the eggs were being set.

**Impact of the Incubation and Embryology Experience on Students**

In response to two questions, teachers were asked to share their perception of the impact of the incubation and embryology experience on ten (10) different life skills and ten (10) science abilities of their students. Increases in at least one of these skill or ability areas were reported by 48 (83%) of the 53 teachers who answered these questions.

With respect to life skills, more than half of the 53 teachers reported perceived increases in their students’ skills in demonstrating:

- Teamwork—35 (66%)
- Sharing—35 (66%)
Concern for others —35 (66%)
Cooperation—34 (64%)
Critical Thinking—33 (62%)
Self-responsibility—33 (62%)
Keeping records—33 (62%)

One-third to one-half of the teachers who responded to the question perceived increases in their students’ skills in demonstrating:
- Decision-Making—25 (47%)
- Personal Safety—25 (47%)
- Healthy Lifestyle choices—21 (39%)

In total, 48 (91%) of the 53 teachers who answered this question indicated a perceived increase in at least one of these 10 life skills.

With respect to science abilities, slightly over one-half of the 53 teachers who answered the question reported perceived increases in their students’ ability to:
- Hypothesize 35 (66%)
- Observe—34 (65%)
- Interpret/analyze/reason—29 (56%)
- Question—29 (56%)
- Collect data—28 (54%)
- Predict—27 (52%)
- Problem solve —27 (52%)
- Evaluate—26 (50%)

In addition nearly one-third to one-half reported perceived increases in their students’ ability to:
- Communicate/demonstrate—24 (46%)
- Summarize—23 (44%)

In total, 48 (91%) of the 53 teachers who answered this question indicated a perceived increase in at least one of these 10 science abilities.

Students were asked to hold up their hands in responding to six science-related statements. More than 90% of the teachers indicated that more than half of their students: 1) would like to do more activities like the Incubation and Embryology program (100%), 2) like science (100%), and 3) feel they are good at science (90%). From 80%-90% of the teachers indicated that half of their students 1) feel science will be important in their future (88%) and 2) feel that science is useful for solving everyday problems (86%). Fifty-eight percent (58%) of the teachers indicated that over half of their students would like to have a job related to sciences.

Success Stories
- After seeing how life is created in this program students are excited about science. This year they were extremely concerned about the chicks’ well-being and asked a lot of questions about those that did not hatch. I think it was because I had all seniors this year and many of them male
and female are parents. Some were pregnant so that made associations with their children and unborn fetuses.

- Exciting to get a chick that was not yellow. Kids prediction was based on color of eggs and they decided a brown egg would be different.
- At first I was hesitant to try incubating the eggs with my 6th graders, I thought it might be too juvenile for them. However, I cannot express how much they LOVED this activity! Every aspect of the incubation and embryology was related to our life science/cells unit. Students rushed to class each day to check on our eggs process, and kept a detailed journal of the eggs development (I used the Chick Days 1-21 Power Point).
- This was my first year, so my class was thrilled with the results (and so was I!). We followed the protocol carefully and had great success!
- My children knew nothing about embryology and were so eager to learn and share their knowledge with the other students here at school. Besides your curriculum, I was able to adapt some common core standards. We have children here that cannot communicate, but responded when they were exposed to the baby chicks. Enthusiasm grew as hatching day approached. Everyone in the school were anticipating the arrival of the baby chicks. My students were able to witness one hatch. They were amazed at this process, especially after the candling and seeing life inside the eggs. My classroom became a visiting nursery once the chicks hatched. My students were the doctors and nurses and shared the embryology process to other classes. Received so many positive comments about the benefits and life skills this opportunity provided for everyone involved. I feel so fortunate to have been able to share this experience.

**Summary**

University of Illinois Extension 4-H offers teacher training for a fee in Incubation and Embryology in the spring of each year. Teachers participate in hands-on activities; receive educational materials to use in the classroom, chick feed, a list of homes for baby chicks, and access to a website of teacher resources. Teachers may also earn CPDU’s. In return, the teachers provide their own incubators, brooder box, and heat source as well as follow the principles of incubation. In 2014, 191 teachers in grades K-12 and 12,161 students shared their experiences and what they learned while participating in the programs conducted in classrooms throughout northeast Illinois.

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