

# Saunders County 4-H School Enrichment Program

## 4-H Overview

The Nebraska 4-H mission is “to empower youth to reach their full potential, working and learning in partnership with caring adults.”

4-H is delivered by Cooperative Extension – an organization of more than 100 public universities across the U.S. that provides experiences for youth to ‘learn by doing’. Nebraska 4-H strives to equip youth with the skills and knowledge they need to lead them through their lives.



## What is 4-H School Enrichment?

School Enrichment Programs are learning experiences offered to students during school hours by local 4-H educators. These programs are designed to enhance the subject matter being studied in the classroom, provide hands-on education, introduce a new topic to students, or spark a new interest!

The 4-H School Enrichment Program is a great way to connect and collaborate with your local Extension office and achieve your classroom’s educational goals.

### Contact us today to schedule your program

Nebraska Extension in Saunders County  
1071 County Road G.  
Ithaca, NE 68033  
402-624-8030

#### 4-H Staff

Cole Meador– Extension Educator, 4-H. [cmeador2@unl.edu](mailto:cmeador2@unl.edu)

Jenna Hanson– Extension Assistant, 4-H. [jhanson19@unl.edu](mailto:jhanson19@unl.edu)

Website: [Saunders.unl.edu](http://Saunders.unl.edu)

Facebook: [saunderscountyextension4h](https://www.facebook.com/saunderscountyextension4h)



## STEM and Agriculture Lessons and Learning Kits Available.



Interested in learning at home or school at your own pace or have 4-H staff teach lessons? Nebraska Extension in Saunders County has the following lessons ready to be taught by our staff or available as ready to use kits. Further details are available in the individual kits.

Looking for exciting activities to enhance your current curriculum? 4-H School Enrichment, as delivered through the Nebraska Extension, offers experiential learning programs aligned with the Nebraska State Board of Education Content Area Standards in the areas of English language arts, mathematics, and science. Programs are also offered in social studies and career education.

All programs are designed to enrich your classroom curriculum and they are available to teachers in Saunders county. See below for a list of current offerings with their recommended grade levels and fees. All materials needed for the program are included.

4-H School Enrichment resources include teacher guides, student manuals, teaching kits, and staff presentations. The Nebraska Extension in Saunders County staff can teach the project to the students in the classroom or provide the materials to the teacher to use.

**Other hands on learning opportunities can be offered.**

**Let us know what you are looking for!**



AFTER  SCHOOL  
**ENRICHMENT**



**N** |   
**EXTENSION**

 **4-H**  
**SCHOOL**  
**ENRICHMENT**

## **Embryology: Available throughout the year. Availability may vary.**

**Offered March – May AND September – November.** It can be delivered in person, virtually or a kit dropped off at your school.

This program teaches students how life develops through the process of hatching baby chicks over a three-week period. Eggs are set on Tuesday or Wednesday and are candled 1-week later Tuesday or Wednesday. The chicks hatch on day 21; incubators and chicks are collected the week of hatch. Students will take responsibility for caring for the fertilized eggs during the 21-day incubation and the baby chicks after they hatch (for a few days).

**Objectives: State Education Standards: SC.3.9.3.A, SC.4.6.3.B, LA 3.1.5, LA 4.1.5, LA 5.1.5**

- Explain the life cycle of a chicken.
- Observe and understand embryo development.
- Describe the process involved in a growing chicken embryo as it directly relates to the different parts of an egg, the proper elements needed to grow and hatch, and the various natural developments that occur.
- Recognize that all animals start off with a similar process during the beginning stages of life.
- Develop an appreciation of the miracle of life, with eggs and all forms of life.

**We will provide the following materials and services:**

- 1 dozen fertilized eggs per 3rd grade classroom.
- 1 incubator per classroom.
- Food for chicks after they hatch.
- Curriculum & easy-to-use hatching resources.
- Deliver eggs with 20-minute classroom presentation (Tuesday or Wednesday).
- Return to classroom in 7 days for egg candling with a 20-minute presentation.
- Return at the end of project to pick up chicks and all supplies.

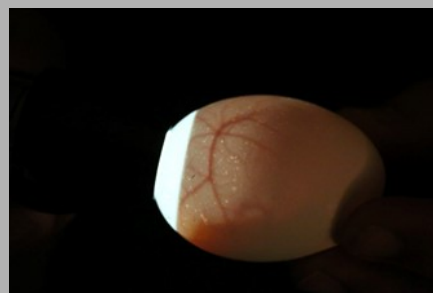


Chicken eggs take 21 days to hatch. During these three weeks, teachers will need to assign responsibilities to the students to make sure the eggs have the best possible chance for hatching. Students will need to do the following activities during this unit:

Students turn the eggs three times each day (morning, lunch time and before they go home). Teachers will have to turn eggs at least once per day over weekends and other days school is not in session.

Provide a home for the chicks once hatched by preparing a box with a heat lamp and shredded paper in the bottom. A cardboard or plastic box works great. The heat lamp can be as simple as a desk lamp with a 100-watt bulb (No LED bulbs).

Feed and water the chicks for 2-3 days after they have hatched (provided).



## **Butterflies:**

Students will receive a live butterfly classroom experience! The butterfly kit is full of activities , resources, and ideas to be used with the live specimens. Students can observe the transformation from caterpillars to chrysalides to butterflies with their own butterfly observation box. Available only in the spring. Limited availability. Order early!

### **Educational Standards Supported:**

SC.K.7.2.A Use observations to describe patterns of what plants and animals (including humans) need to survive.

SC.1.6.2.D Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like their parents.

SC.2.7.2.B Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.

SC.3.9.3.A Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

SC.7.8.4.C Analyze and interpret data to provide evidence for the effects of resource availability.

Cost: \$20 per classroom

*Suggested Grade Level: K - 8th*



Students will learn the importance of Nebraska's largest industry – Agriculture. Everyone is involved in this industry either directly or indirectly. Agriculture involves the production, processing, and distribution of food plus the production of fuel and fiber. Agriculture uses science and technology to produce the safest and most abundant food source in the world. Nebraska produces food that is shipped to every state in the United State and every continent in the world.

### **Ice Cream in a Bag:**

Students will explore the dairy industry, learn where milk comes from, and learn about the nutritional benefits of ice cream, all while making a delicious treat!

**Cost:** Free

**Suggested Grade Level:** K-5th

**Time:** 1 hour



### **Whipping Butter into Shape**

Students will learn about the source of dairy products and how butter is made. This fun activity will have them curious about dairy cows and start the scientific inquiry process.

**Cost:** Free

**Suggested Grade Level:** K-5th

**Time:** 1 hour



## **Farm in a Glove:**

Interested in watching plants develop in front to your eyes and learn about their importance? Plants are part of our everyday life. From the food we eat, to the clothes we wear, to the cars we drive; we can give credit to plants! Plants that are grown for human use, whether it is to eat, to wear, or to use as a power source, are called crops. Agriculture and farmers work to provide crops for us!

### **Educational Standards Supported:**

SC.1.6.2.B Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

SC.3.9.3.A Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

Cost: Free

Suggested Grade: K-5

Time: one hour



## **Positively Popcorn:**

This lesson is a hands on activity on the process of how popcorn pops using gas as a form of matter. Youth will use science to learn the importance of agriculture and how popcorn goes from a seed to a snack.

### **Educational Standards Supported:**

SC5.2.1 Students will explore and describe the physical properties of matter and its changes.

LA 4.1 Students will learn and apply reading skills and strategies to comprehend text.

Cost: Free

*Suggested Grade Level: K-4th*

*Time: 30 minutes to 1 hour*



## Owl Pellets

Explore the wild world of animal predator/prey relationships by dissecting sterilized owl vomit, referred to as owl pellets. Students will get the opportunity to learn about how predators seek out and hunt their prey and how digestion works. Students will dissect an owl pellet and determine what the owl ate. Was it a mouse, rabbit or some other animal? We'll do a little investigative work to find out!

Suggested Grade Level: 2nd—7th Cost:

\$45 per classroom

Teaching time: 45 minutes

Nebraska's College and Career Ready Standards of Science

Addressed: SC.2.7.2.C, SC.4.6.3.B, SC.5.8.2.A, SC.5.8.2.C, SC.7.8.4.A



## Pumpkin Life Cycle

Pumpkins come in all shapes, sizes, and colors. Youth will learn all about the life cycle of a pumpkin through this hands-on opportunity. They will use their senses to see, smell, taste and feel parts of the pumpkin.

Suggested Grade Level: 1st—2nd

Cost: \$25 per classroom

Teaching time: 45 minutes

Learning Objectives:

By the end of the lesson, students should be able to:

- Understand the life cycle of a pumpkin.
- Identify the different uses of a pumpkin.
- Use their senses: to see, smell, taste and feel parts of the pumpkin.



## Escape through Nebraska

The purpose of this escape room is to be a summit activity for Nebraska 4th grade students. It will utilize information they have learned over the course of the year about Nebraska History to escape this challenge.

Suggested Grade Level: 4th

Cost: \$20 per classroom

Teaching time: 45 minutes

Nebraska Social Studies Standards:

- SS 4.3.1.a Use local and state maps and atlases to locate physical and human features in Nebraska.
- SS 4.3.1.d Differentiate between classifications of bodies of water, cities, and land masses.
- SS 4.3.1.a Use local and state maps and atlases to locate physical and human features in Nebraska.
- SS 4.3.2.b Classify regions and places within the state of Nebraska using physical and human features.
- SS 4.4.1.a Analyze the chronology of key state and/or regional events and communicate their impact on the past, present, and future.



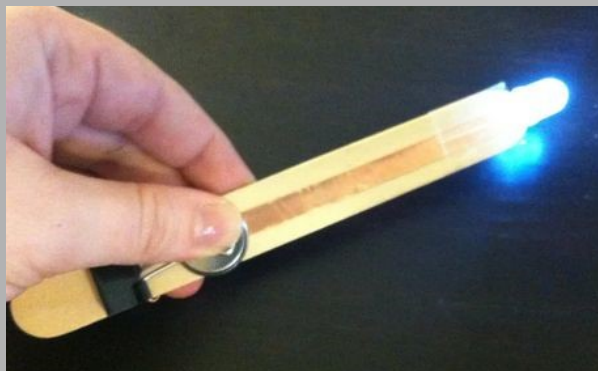
## STEM: Electricity

In this activity, you will try to make an electric current flow through a circuit using Snap Circuits. You will know the instant you are successful because it will work! When you have mastered your simple circuit, experiment with other ways to make the circuit, or devise a simple switch. Once that is mastered we can experiment with various activities including Light-up greeting cards or simple flashlights.

Suggested Grade Level: 2nd—6th

Cost: \$2 per child

Teaching time: 45 minutes





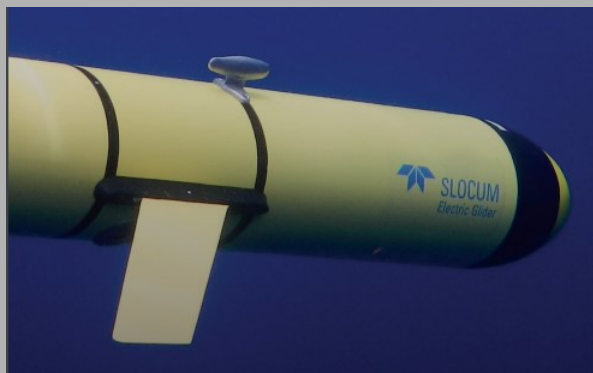
## STEM Challenge: Explorers of the Deep

Youth will develop observational and critical thinking skills while exploring the interconnections between the ocean and humans. Activities are based on Ocean Literacy Principles and Fundamental Concepts. Youth will complete multiple activities to understand how ocean robots work through exploration of density and buoyancy, explore data collected by ocean robots, identify ways they are connected to the ocean, and explore current challenges that ocean scientists, engineers and technologists are currently addressing.

Suggested Grade Level: 3rd—8th

Cost: \$20 per classroom

Teaching time: 3 90-minute sessions or 1 2-hour session



### Next Generation Science Standards:

MS-ETS1-1: Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

MS-ETS1-3: Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

MS-ETS1-4: Develop a model to generate data for iterative testing and modification of a proposed object, tool or process such that an optimal design can be achieved.

MS-LS2-1: Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

MS-ESS3-3: Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

MS-ESS3-3: Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

MS-LS2-4: Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

MS-LS2-1: Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

## Biomedical Engineering—Laparoscopic Surgery

This lesson focuses on teaching students that one aspect of engineering is biomedical engineering. Students will see that within biomedical engineering, many concepts from engineering disciplines are used. The laparoscopic surgery activity will encourage students to think as engineers to come up with their own solutions to some of the medical challenges that have been solved by biomedical engineers. Specific activities include examination of material properties and functions of surgical instruments, and a simulation of the training experience of a surgical resident. Students will work in teams as surgical residents using surgical instruments they designed to complete tasks that are inside of a box, hidden from direct view – a setup similar to laparoscopic surgery. They are able to see inside of the box with the help of a “laparoscope” (IPAD or webcam). This engaging activity shows students one application of engineered medical instrumentation. They also learn that an engineer’s job does not end with a finished product because they must also train and work with others to use the device correctly.

Suggested Grade Level: 3rd—8th

Cost: \$20 per classroom

Teaching time: 1 Hour +

Next Generation Science Standards: Science

- Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. (Grades 6 - 8)

Nebraska Science Standards (3-5)

- SC5.1.1.a Ask testable scientific questions
- SC5.1.1.b Plan and conduct investigations and identify factors that have the potential to impact an investigation
- SC5.1.1.g Share information, procedures, and results with peers and/or adults
- SC5.1.1.h Provide feedback on scientific investigations
- Hypothesize about shapes, materials, and design of medical instruments



## Does Soap Float?

Students will carry out an investigation in order to answer a central question: Does soap float? Using scientific inquiry, students will form a hypothesis and carry out experiments.

Suggested Grade Level: 3rd—5th

Cost: \$25 per classroom

Teaching time: 60 minutes

This lesson contains concepts from the following benchmarks:

- 1B The Nature of Science: Scientific Inquiry (3-5) #3
- 12A Habits of Mind: Values and Attitudes (3-5) #1, 2



## MythBusters: Bacteriology

Students will learn about good and bad bacteria and learn about how bacteria is spread. Students will play a game of MythBusters to determine if the myths are true or false. We will then complete activities to see how bacteria is transferred and learn how to effectively wash hands. The students will gather samples using agar dishes and then during the second session will explore the bacteria growth.

Suggested Grade Level: 4th—6th

Cost: \$45 per classroom

Teaching time: 2 60 minute sessions

Nebraska's College and Career Ready Standards of Science Addressed:  
SC.4.6.3.B; SC.5.3.1.C, SC.6.6.2.A, SC.6.9.3.B



## STEM Challenge—Ocean Debris Cleaner Design

After learning about ocean pollution, students use the engineering design process to build an ocean debris cleaner that has buoyancy and can pick up microplastics.

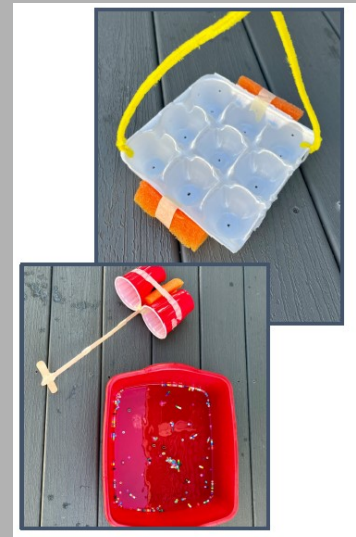
Suggested Grade Level: 2nd—6th

Cost: \$25 per classroom

Teaching time: 90 minutes

Next Generation Science Standards (NGSS):

- 2-ESS2-3. Obtain information to identify where water is found on Earth and that it can be solid or liquid. Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form.
- 2-PS1-1 Matter can be described and classified by its observable properties.
- 3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- 3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- 3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
- 5-PS1-3. Make observations and measurements to identify materials based on their properties
- 5-ESS2-1 The ocean supports a variety of ecosystems and organisms, shapes, landforms, and influences climate.
- MS-ESS2-6 Variations in density due to variations in temperature and salinity drive a global pattern of interconnected ocean currents.
- MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
- MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.



**Interested in having us teach one of the lessons in your classroom?  
Complete the Google Form Below!**

<https://go.unl.edu/9gmy>

