

MAEF's Mobile Science Labs

Ag Products Lab Choices

Mobile Science Lab Investigations and Curriculum Connections

The investigations on the Mobile Science Labs allow are aligned with the NGSS, Environmental Literacy, and Common Core standards.

The investigations also allow students to explore the NGSS Science and Engineering Practices identified as essential for all students to learn. All investigations address one or more of these practices. To assist in deciding which practices are best addressed in each investigation, the following designation follows each lab choice description – Practices of Science (1,2,3,6,7) would indicate that the investigation was strongest in those practices of science, adding 5 to the list would indicate there is also a math component in the that investigation.

Due to time constraints, NGSS Practice of Science #8, “evaluating and communicating information”, will need to be completed back in the classroom as a follow-up activity. Questions are provided to the teacher for each investigation to assist with this.

There are many other opportunities for the classroom teacher to expand on the investigation by connecting reading and language arts skills based on the mobile lab investigation.

NGSS Science and Engineering Practices

1. *Asking questions and defining problems*
2. *Developing and using models*
3. *Planning and carrying out investigations*
4. *Analyzing and interpreting data*
5. *Using mathematics and computational thinking*
6. *Constructing explanations and designing solutions*
7. *Engaging in argument from back evidence*
8. *Obtaining, evaluating, and communicating information*

Ag Products Lab Choices

50-Minute Lessons

Farmers Protect the Environment (Env)* (Grades 4-5)

This lesson supports the new Environmental Literacy standards as students discover four of the ways (manure pits, fencing, cover crops, buffers) farmers protect the environment and the Chesapeake Bay. The team designs its own environmentally friendly farm.



This lesson supports the following practices and standards:

NGSS Science and Engineering Practices: (1,2,6,7)

NGSS Disciplinary Core Idea:

- **ESS3.C Human impacts on Earth systems:** Societal activities have had major effects on the land, ocean, atmosphere, and even outer space. Societal activities can also help protect Earth's resources and environments.

Environmental Literacy Connections:

- **Standard 5 Topic A Indicator 1:** Analyze the effects of human activities on earth's natural processes.
- **Standard 5 Topic A Indicator 2:** Analyze the effects of human activities that deliberately or inadvertently alter the equilibrium of natural processes.

Common Core State Standards Connections (ELA/Literacy/Writing):

- **Grade 4:** RI.4.1, RI.4.3, RI.4.7, W.4.2
- **Grade 5:** RI.5.3, W.5.2

Maryland Social Studies Standards Connections:

- **MSDE 3.0.D.1 (Geography) Grade 4:** Describe how people adapt to, modify and impact the natural environment.
- **MSDE 3.0.D.1 (Geography) Grade 5:** Describe why and how people adapt to and modify the natural environment and the impact of those modifications.

Farmers Protect the Environment (Env Pri)* (Grades 2-3)

This session is similar to the one above for 4-5th grades but focuses on three practices (manure pits, fencing, buffers) farmers use. The teams also design an environmentally friendly farm.



This lesson supports the following practices and standards:

NGSS Science and Engineering Practices: (1,2,6,7)

NGSS Disciplinary Core Idea:

- **ESS3.C Human impacts on Earth systems (K-2):** Things people do can affect the environment, but they can make choices to reduce their impacts.
- **ESS3.C Human impacts on Earth systems (3-5):** Societal activities have had major effects on the land, ocean, atmosphere, and even outer space. Societal activities can also help protect Earth's resources and environments.

Environmental Literacy Connections:

- **Standard 5 Topic A Indicator 1:** Analyze the effects of human activities on earth's natural processes.
- **Standard 5 Topic A Indicator 2:** Analyze the effects of human activities that deliberately or inadvertently alter the equilibrium of natural processes.

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Common Core Standards Connections (ELA/Literacy):

- **Grade 2:** RI.2.1, RI.2.3, RI.2.7
- **Grade 3:** RI.3.1, RI.3.3, RI.3.7

Maryland Social Studies Standards Connections:

- **MSDE 3.0.D.1 (Geography) Grades 2 and 3:** Explain how people modify, protect, and adapt to their environment.

CSI: Candy Science Investigators (CSI)* (Grades 3-5)

Students act as food scientists as they discover the properties of some of their favorite candies using a chemical test that bubbles and fizzes. Ingredient cards are used to inform them if their predictions are correct!



This lesson supports the following practices and standards:

NGSS Science and Engineering Practices: (1,3,4,6)

NGSS Disciplinary Core Idea:

- **PS1.B Chemical Reactions:** When two or more different substances are mixed, a new substance with different properties may be formed.

Common Core Standards Connections (ELA/Literacy):

- **Grade 3:** RI.3.1, RI.3.3, RI.3.7
- **Grade 4:** RI.4.1, RI.4.3, RI.4.7
- **Grade 5:** RI.5.1, RI.5.3, RI.5.7

From Pod to Candy Bar (Pod)* (Grades 1-3)



Students explore how many candy bar ingredients begin in pods and then perform an experiment to determine which candy will sink or float because of its ingredients/properties. Students make a candy bar charm. The lesson can end with a simple taste test to determine the class favorite on a bar graph. *(Students will taste- test one milk chocolate chip, one semi-sweet chocolate chip, and a white chocolate chip. The lesson can be done without the taste test.)*

This lesson supports the following practices and standards:

NGSS Science and Engineering Practices: (1,3,4,6,7)

NGSS Disciplinary Core Idea:

- **LS1.A Structure and Function:** All organisms have external parts. Plants have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.

Common Core Standards Connections (ELA/Literacy):

- **Grade 1:** RI.1.1, RI.1.3, RI.1.7
- **Grade 2:** RI.2.1, RI.2.3, RI.2.7
- **Grade 3:** RI.3.1, RI.3.3, RI.3.7

Maryland Social Studies Standards Connections:

MDSE 4.0.A.2 (Grades 1, 2, and 3): Explain the production process.



Colorful Bean (Colorful)* (Grades 2-5)

(An investigation and demonstration) Students experiment to decide whether petroleum-based or soybean-based crayons produce the brightest color, best coverage and least flakiness. Lesson includes a soybean crayon making demonstration. Students take home a soybean crayon.

This lesson supports the following practices and standards:

NGSS Science and Engineering Practices: (1,3,4,6,7)

NGSS Disciplinary Core Idea:

- **PS1.B Chemical Reactions:** Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not.
- **PS1.B Chemical Reactions:** When two or more different substances are mixed, a new substance with different properties may be formed.
- **ESS3.A Natural Resources:** Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways.

Environmental Literacy Connections:

- **Standard 5 Topic A Indicator 1:** Analyze the effects of human activities on earth's natural processes.
- **Standard 5 Topic A Indicator 2:** Analyze the effects of human activities that deliberately or inadvertently alter the equilibrium of natural processes.

Common Core Standards Connections (ELA/Literacy):

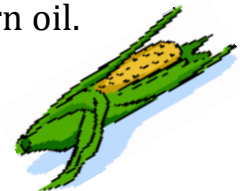
- **Grade 2:** RI.2.1, RI.2.3, RI.2.7
- **Grade 3:** RI.3.1, RI.3.3, RI.3.7
- **Grade 4:** RI.4.1, RI.4.3, RI.4.7
- **Grade 5:** RI.5.1, RI.5.3, RI.5.7

Maryland Social Studies Standards Connections:

- **MDSE 4.0.A.2 (Grade 3):** Explain the production process.
- **MSDE 4.0.A.2 (Grade 4):** Explain how economic resources are used to produce goods and services to satisfy economic wants in Maryland.

Corn: The Environmentally Friendly Crop (Corn)* (Grades 3-5)

This two-fold lab experience has students examine the environmental impact of a packing foam made from petroleum with one made from corn. Then, students create a plastic made from cornstarch and corn oil.



This lesson supports the following practices and standards:

NGSS Science and Engineering Practices: (1,3,4,5,6,7)

NGSS Disciplinary Core Idea:

- **PS1.B Chemical Reactions:** When two or more different substances are mixed, a new substance with different properties may be formed.
- **ESS3.A Natural Resources:** Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways.
- **ESS3.C Human impacts on Earth systems:** Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments.

Environmental Literacy Connections:

- **Standard 5 Topic A Indicator 1:** Analyze the effects of human activities on earth's natural processes.
- **Standard 5 Topic A Indicator 2:** Analyze the effects of human activities that deliberately or inadvertently alter the equilibrium of natural processes.

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Common Core Standards Connections (ELA/Literacy):

- **Grade 3:** RI.3.1, RI.3.2, RI.3.3, RI.3.9
- **Grade 4:** RI.4.1, RI.4.2, RI.4.3, RI.4.9
- **Grade 5:** RI.5.1, RI.5.3, RI.5.9

Maryland Social Studies Standards Connections:

- **MDSE 4.0.A.2 (Grade 3):** Explain the production process.
- **MSDE 4.0.A.2 (Grade 4):** Explain how economic resources are used to produce goods and services to satisfy economic wants in Maryland

Cream to Butter (Cream)* (Grades 3-5)

Students are given the task of testing various milk products to determine which one will produce butter and to discover why it produces butter. Session ends with students sampling their product with teacher permission.



This lesson supports the following practices and standards:

NGSS Science and Engineering Practices: (1,3,4,6)

NGSS Disciplinary Core Idea:

- **PS1.B Chemical Reactions:** When two or more different substances are mixed, a new substance with different properties may be formed.

Environmental Literacy Connections:

Common Core Standards Connections (ELA/Literacy):

- **Grade 3:** RI.3.1, RI.3.2, RI.3.3
- **Grade 4:** RI.4.1, RI.4.2, RI.4.3
- **Grade 5:** RI.5.1, RI.5.3

Maryland Social Studies Standards Connections:

- **MDSE 4.0.A.2 (Grade 3):** Explain the production process.
- **MSDE 4.0.A.2 (Grade 4):** Explain how economic resources are used to produce goods and services to satisfy economic wants in Maryland.



Egg-citing Eggs (Eggs)* (Grades 3-5)

Students act as egg inspectors after cracking open an egg and discovering and labeling its parts. Eggs are candled, weighed and measured, and inspected for freshness.

This lesson supports the following practices and standards:

NGSS Science and Engineering Practices: (1,2,3,4)

NGSS Disciplinary Core Idea:

- **LS1.A Structure and Function:** Organisms have both internal and external macroscopic structures that allow for growth, survival, behavior, and reproduction.

Common Core Standards Connections (ELA/Literacy):

- **Grade 3:** RI.3.1, RI.3.3, RI.3.4, RI.3.7
- **Grade 4:** RI.4.1, RI.4.3, RI.4.4, RI.4.7
- **Grade 5:** RI.5.1, RI.5.3, RI.5.4, RI.5.7

Maryland Social Studies Standards Connections:

- **MDSE 4.0.A.2 (Grade 3):** Explain the production process.
- **MSDE 4.0.A.4 (Grade 4):** Describe regional economic specialization in Maryland and the ways people live and work.

Fabric Scientists (Fabric)* (Grades 3-5)

Students explore every day fabrics such as cotton, wool, and polyester as they conduct tests (stretch, ravel, absorption, wrinkle, snag, flammability) to decide which fabrics are best for different uses. It becomes apparent that their jeans and t-shirts are agricultural products.

This lesson supports the following practices and standards:

NGSS Science and Engineering Practices: (1,3,4,6,7)

NGSS Disciplinary Core Idea:

- **PS1.B Chemical Reactions:** When two or more different substances are mixed, a new substance with different properties may be formed.

Common Core Standards Connections (ELA/Literacy):

- **Grade 3:** RI.3.1, RI.3.3, RI.3.4, RI.3.7
- **Grade 4:** RI.4.1, RI.4.3, RI.4.4
- **Grade 5:** RI.5.1, RI.5.3, RI.5.4

Maryland Social Studies Standards Connections:

- **MDSE 4.0.A.2 (Grade 3):** Explain the production process.
- **MSDE 4.0.A.3 (Grade 3):** Explain how technology affects the way people live, work, and play.
- **MSDE 4.0.A.3 (Grade 4):** Explain how technological changes affected production and consumption in Maryland.



Mighty Smooth Bean (Mighty)* (Grades 3-5)

(An investigation and demonstration) The power of a soybean is revealed to students as they plant seeds in plaster of Paris and watch this bean show its strength. A demonstration follows with lip balm being made from beeswax and soybean oil. Students take home a sample.



This lesson supports the following practices and standards:

NGSS Science and Engineering Practices: (1,2,3,6,7)

NGSS Disciplinary Core Idea:

- **PS1.B Chemical Reactions:** When two or more different substances are mixed, a new substance with different properties may be formed.
- **ESS3.A Natural Resources:** Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways.
- **LS1.A Structure and Function:** All organisms have external parts. Plants have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.

Common Core Standards Connections (ELA/Literacy):

- **Grade 3:** RI.3.1, RI.3.3
- **Grade 4:** RI.4.1, RI.4.3
- **Grade 5:** RI.5.1, RI.5.3

Maryland Social Studies Standards Connections:

- **MDSE 4.0.A.2 (Grade 3):** Explain the production process.

Glue from Milk (Glue)* (Grades 3-5)



Students act as chemists and laboratory technicians as they produce glue from milk and then test the strength of their glue against Elmer's glue using a peel test, tensile strength test, and shear strength test. *(Students will create the new glue and set up the three tests in the lab. Instructions for testing the glue will be sent back to the classroom to allow for drying time.)*

This lesson supports the following practices and standards:

NGSS Science and Engineering Practices: (1,2,3,4,7)

NGSS Disciplinary Core Idea:

- **PS1.B Chemical Reactions:** When two or more different substances are mixed, a new substance with different properties may be formed.

Common Core Standards Connections (ELA/Literacy):

- **Grade 3:** RI.3.1, RI.3.3, RI.3.4, RI.3.7
- **Grade 4:** RI.4.1, RI.4.3, RI.4.4
- **Grade 5:** RI.5.1, RI.5.3, RI.5.4

Maryland Social Studies Standards Connections:

- **MDSE 4.0.A.2 (Grade 3):** Explain the production process.
- **MSDE 4.0.A.2 (Grade 4):** Explain how economic resources are used to produce goods and services to satisfy economic wants in Maryland.



Thirsty Stems (Thirsty)* (Grades 2-5)

Students discover the parts of a plant and their function as they assemble a working model and watch the process of capillary action occur right before their eyes.

This lesson supports the following practices and standards:

NGSS Science and Engineering Practices: (1,2,3,6)

NGSS Disciplinary Core Idea:

- **LS1.A Structure and Function:** All organisms have external parts. Plants have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.

Common Core Standards Connections (ELA/Literacy):

- **Grade 3:** RI.3.1, RI.3.3, RI.3.4, RI.3.7
- **Grade 4:** RI.4.1, RI.4.3, RI.4.4, RI.4.7
- **Grade 5:** RI.5.1, RI.5.3, RI.5.4, RI.5.7



Super Slurper (Slurper)* (Grades 3-5)

Students examine the absorbency of several household products and then investigate the water holding properties of a commercial agricultural product and a consumer product (a chemical polymer). The results of this experiment are related to new developments in the agricultural industry and served as a precursor to the development of disposable diapers.

This lesson supports the following practices and standards:

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NGSS Science and Engineering Practices (1,3,4,6,7)

NGSS Disciplinary Core Idea:

- **PS1.B Chemical Reactions:** When two or more different substances are mixed, a new substance with different properties may be formed.

Common Core Standards Connections (ELA/Literacy):

- **Grade 3:** RI.3.1, RI.3.3, RI.3.7
- **Grade 4:** RI.4.1, RI.4.3, RI.4.7
- **Grade 5:** RI.5.1, RI.5.3, RI.5.7



Maryland Social Studies Standards Connections:

- **MDSE 4.0.A.2 (Grade 3):** Explain the production process.
- **MSDE 4.0.A.2 (Grade 4):** Explain how economic resources are used to produce goods and services to satisfy economic wants in Maryland.

Well Contamination ~ From Where to Where? (Well)* (Grades 3-5)

An imaginary town is experiencing pollution in some of its wells. Students collect data as they analyze potentially contaminated wells and the possible source of contamination. Conclusions are drawn as students report to the town council their findings.



This lesson supports the following practices and standards:

NGSS Science and Engineering Practices: (1,2,3,4,6,7)

NGSS Disciplinary Core Idea:

- **PS1.B Chemical Reactions:** When two or more different substances are mixed, a new substance with different properties may be formed.
- **ESS3.C Human Impacts on Earth's Systems:** Societal activities have had major effects on the land, ocean, atmosphere, and even outer space. Societal activities can also help protect Earth's resources and environments.

Environmental Literacy Connections:

- **Standard 5 Topic A Indicator 2:** Analyze the effects of human activities that deliberately or inadvertently alter the equilibrium of natural processes.
- **Standard 7 Topic A Indicator 1:** Investigate factors that influence environmental quality.

Common Core Standards Connections (ELA/Literacy):

- **Grade 3:** RI.3.1, RI.3.3, RI.3.7
- **Grade 4:** RI.4.1, RI.4.3, RI.4.7
- **Grade 5:** RI.5.1, RI.5.3, RI.5.7

Maryland Social Studies Standards Connections:

- **MSDE 3.0.D.1 (Geography) Grade 3:** Explain how people modify, protect, and adapt to their environment.
- **MSDE 3.0.D.1 (Geography) Grade 4:** Describe how people adapt to, modify and impact the natural environment.
- **MSDE 3.0.D.1 (Geography) Grade 5:** Describe why and how people adapt to and modify the natural environment and the impact of those modifications.



Important Scheduling Information

- When planning a schedule, allow a minimum of 50-60 minutes for each lesson.
- Allow **10 minutes between classes** for clean-up and set up of the same lesson.
- If the need arises to change entirely from one lesson to a different lesson, **an additional 20-30-minute break must be allotted** for the change-over.
- Please limit lesson changes to no more than 2 per day. This helps maximize your students' time in the lab.
- A **30-minute lunch break for the lab teacher must be included**. The teacher's lunch can NOT be used for a lesson change-over.
- For emergency and safety reasons, classroom teachers must stay with their classes when in the lab.
- A **parent/volunteer** is needed all day, each day on the lab to assist the lab teacher. This is in addition to the classroom teacher. You can have different volunteers during the day, but we ask for no more than one at a time on the lab.
- Prior to coming out to the lab, please divide your class into 12 equal teams for each of the 12 work stations inside the lab.

When listing your selections on the class schedule, use the shortened (Title)* for the lab choice. Our teachers have the option of changing a lab selection when it seems not to be age appropriate.

Ag Products Lab Choices

25-Minute Mini-Lessons

The Cow in Patrick O'Shanahan's Kitchen (K-4)

After enjoying a delightful, realistic fiction tale, students discover some amazing cow facts and make & taste real butter.

This lesson supports the following practices and standards:

NGSS Science and Engineering Practices: (1,2,3)

NGSS Disciplinary Core Ideas:

- **PS1.A Structure of Matter (K-2):** Matter exists as different substances that have observable different properties.
- **PS1.A Structure of Matter (3-4):** Because matter exists as particles that are too small to see, matter is always conserved even if it seems to disappear.

Common Core Standards Connections (ELA/Literacy):

- **Kindergarten:** *RL.K.1, RL.K.7*
- **Grade 1:** *RL.1.1, RL.1.7*
- **Grade 2:** *RL.2.1, RL.2.7*
- **Grade 3:** *RL.3.1, RL.3.7*
- **Grade 4:** *RL.4.1*

Maryland Social Studies Standards Connections:

- **MSDE 4.0.A.2 (Grade K):** Identify that resources are used to make products.
- **MDSE 4.0.A.2 (Grades 1-3):** Explain and examine the production process.



The Little Red Hen Makes a Pizza (Pizza)* (Grades K-3)

Students participate in a story using props and puppets and then make a Pizza Charm which shows that pizza comes from the farm not the pizza store.

This lesson supports the following practices and standards:

NGSS Science and Engineering Practices: (1,2,3)

NGSS Disciplinary Core Ideas:

- **LS2.A Interdependent Relationships in Ecosystems (K-2):** Plants depend on water and light to grow, and also depend on animals for pollination or to move their seeds around.
- **LS2.A Interdependent Relationships in Ecosystems (3-4):** The food of almost any animal can be traced back to plants.

Environmental Literacy Connections:

- **Standard 4 Topic C Indicator 1:** Explain how the interrelationships and interdependencies of organisms and populations contribute to the dynamics of communities and ecosystems.

Common Core Standards Connections (ELA/Literacy):

- **Kindergarten:** *RL.K.1, RI.K.3*
- **Grade 1:** *RL.1.1, RI.1.3*
- **Grade 2:** *RL.2.1, RI.2.3*
- **Grade 3:** *RL.3.1*



Maryland Social Studies Standards Connections:

- **MSDE 4.0.A.2 (Grade K):** Identify that resources are used to make products.
- **MDSE 4.0.A.2 (Grades 1-3):** Explain and examine the production process.

Who Lives on the Farm? (Farm)* (Grades K-1)

Students share what they know about farm animals and then learn new facts and “roll” and “stamp” their own barnyard.

This lesson supports the following practices and standards:

NGSS Science and Engineering Practices: (1,2,3)

NGSS Disciplinary Core Ideas:

- **LS1.C Structure of Matter (K-1):** Animals obtain food they need from plants or other animals. Plants need water and light.

Common Core Standards Connections (ELA/Literacy):

- **Kindergarten:** RI.K.7
- **Grade 1:** RI.1.7
- **Grade 2:** RI.2.7



Here, There and Everywhere (HTE)* (Grades 1-5)

Students connect selected farm crops and animals to the products they produce and then use map skills to highlight counties that are the highest producers.

This lesson supports the following practices and standards:

NGSS Science and Engineering Practices: (1,2,3,4)

NGSS Disciplinary Core Ideas:

- **LS4.D Biodiversity and Humans (K-2):** A range of different organisms lives in different places.
- **LS4.D Biodiversity and Humans (3-5):** Populations of organisms live in a variety of habitats. Change in those habitats affects the organisms living there.

Environmental Literacy Connections:

- **Standard 4 Topic C Indicator 1:** Explain how the interrelationships and interdependencies of organisms and populations contribute to the dynamics of communities and ecosystems.

Common Core Standards Connections (ELA/Literacy):

- **Grade 1:** RI.1.3
- **Grade 2:** RI.2.3
- **Grade 3:** RI.3.7
- **Grade 4:** RI.4.7
- **Grade 5:** RI.5.7

Maryland Social Studies Standards Connections:

- **MDSE 3.0.A.1 (Grade K):** Identify and describe how a globe and maps can be used to help people locate places.
- **MDSE 3.0.A.1 (Grades 1-2):** Use geographic tools to locate and describe places on Earth.
- **MDSE 3.0.A.1 (Grade 3):** Use geographic tools to locate and construct meaning about places on Earth.
- **MDSE 3.0.A.1 (Grade 4):** Use geographic tools to locate places and describe the human and physical characteristics of those places.

Tops and Bottoms (T-B)* (Grades K-3)

Students will hear a delightful tale about a lazy bear and clever hare centered around different farm crops. The story is followed by a unique sorting activity.



This lesson supports the following practices and standards:

NGSS Science and Engineering Practices: (1,2,3)

NGSS Disciplinary Core Ideas:

- **LS2.A Interdependent Relationships in Ecosystems (K-2):** Plants depend on water and light to grow, and also depend on animals for pollination or to move their seeds around.
- **LS2.A Interdependent Relationships in Ecosystems (3):** The food of almost any animal can be traced back to plants.

Common Core Standards Connections (ELA/Literacy):

- **Kindergarten:** RL.K.1, RL.K.7
- **Grade 1:** RL.1.1, RL.1.7
- **Grade 2:** RL.2.1, RL.2.7
- **Grade 3:** RL.3.1, RL.3.7

Seeds, Seeds, Seeds (Seeds)* (Grades K-3)

Students use their keen observation skills to examine and identify different kinds of seeds. They then match foods we eat to the seeds that help make them.

This lesson supports the following practices and standards:

NGSS Science and Engineering Practices: (1,2,3)

NGSS Disciplinary Core Ideas:

- **LS1.A Structure and Function:** All organisms have external parts. Plants have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.

Common Core Standards Connections (ELA/Literacy):

- **Kindergarten:** RI.K.3
- **Grade 1:** RI.1.3
- **Grade 2:** RI.2.3
- **Grade 3:** RI.3.3

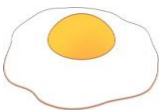
Maryland Social Studies Standards Connections:

- **MSDE 4.0.A.2 (Grade K):** Identify that resources are used to make products.
- **MDSE 4.0.A.2 (Grades 1-3):** Explain and examine the production process.



Egg Model (Model)* (Grades 1-5)

Students discover some interesting facts about eggs and then build a model.



This lesson supports the following practices and standards:

NGSS Science and Engineering Practices: (1,2,3)

NGSS Disciplinary Core Idea:

- **LS1.A Structure and Function:** Organisms have both internal and external macroscopic structures that allow for growth, survival, behavior, and reproduction.

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Common Core Standards Connections (ELA/Literacy):

Grade 1: RI.1.4, RI.1.7

Grade 2: RI.2.4, RI.2.7

Grade 3: RI.3.4, RI.3.7

Grade 4: RI.4.4, RI.4.7

Grade 5: RI.5.4

Important Scheduling Information: Mini-Lessons

- When planning mini-lessons, allow **25-30 minutes** per class.
- Allow **10 minutes between classes** for clean-up and set up of the same lesson.
- **Any time you change to a different lesson or mini-lesson** you must allow 20-30 minutes in the schedule to set up the new lesson.
- Kindergarten classes may only visit the lab one time.
- Pre-school classes may “tour” the lab. Allow 15-20 minutes for a tour and chat about agriculture. They will not participate in a lesson.

When listing your selections on the class schedule, use the shortened (Title)* for the lab choice. Our teachers have the option of changing a lab selection when it seems not to be age appropriate.

Appendix

Below are the Common Core Standards addressed in our Ag Products Mobile Lab. Please refer to the lesson descriptions above to see which standards are supported by the individual lessons.

Kindergarten

- **RI.K.1** With prompting and support, ask and answer questions about key details in a text.
 - **RI.K.3** With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.
 - **RI.K.7** With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).
-
- **RL.K.1** With prompting and support, ask and answer questions about key details in a text.
 - **RL.K.7** With prompting and support, describe the relationship between illustrations and the story in which they appear (e.g., what moment in a story an illustration depicts).

Grade 1

- **RI.1.1** Ask and answer questions about key details in a text.
 - **RI.1.3** Describe the connection between two individuals, events, ideas, or pieces of information in a text.
 - **RI.1.4** Ask and answer questions to help determine or clarify the meaning of words and phrases in a text.
 - **RI.1.7** Use the illustrations and details in a text to describe its key ideas.
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- **RL.1.1** Ask and answer questions about key details in a text.
 - **RL.1.7** Use illustrations and details in a story to describe its characters, setting, or events.

Grade 2

- **RI.2.1** Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
 - **RI.2.3** Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.
 - **RI.2.4** Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.
 - **RI.2.7** Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.
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- **RL.2.1** Ask and answer such questions as who, what, where, when, why, and how to determine understanding of key details in a text.
 - **RL.2.7** Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot.

Grade 3

- **RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

- **RI.3.2** Determine the main idea of a text; recount the key details and explain how they support the main idea.
 - **RI.3.3** Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.
 - **RI.3.4** Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.
 - **RI.3.7** Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).
 - **RI.3.9** Compare and contrast the most important points and key details presented in two texts on the same topic.
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- **RL.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for answers.
 - **RL.3.7** Explain how specific aspects of a text's illustrations contribute to what is conveyed by the words in a story.

Grade 4

- **RI.4.1** Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.
 - **RI.4.2** Determine the main idea of a text and explain how it is supported by key details; summarize the text.
 - **RI.4.3** Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
 - **RI.4.4** Determine the meaning of general academic and domain-specific words and phrases in a text-relevant to a grade 4 topic or subject area.
 - **RI.4.7** Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.
 - **RI.4.4** Determine the meaning of general academic and domain-specific words and phrases in a text-relevant to a grade 4 topic or subject area.
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- **W.4.2** Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
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- **RL.4.1** Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

Grade 5

- **RI.5.1** Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
 - **RI.5.3** Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.
 - **RI.5.4** Determine the meaning of general academic and domain-specific words and phrases in a text-relevant to a grade 5 topic or subject area.
 - **RI.5.7** Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.
 - **RI.5.9** Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.
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- **W.5.2** Write informative/explanatory texts to examine a topic and convey ideas and information clearly.