

Help Them

BOUNCE

**Lessons to
Connect Students
to the Wide
World of Ag
Careers**



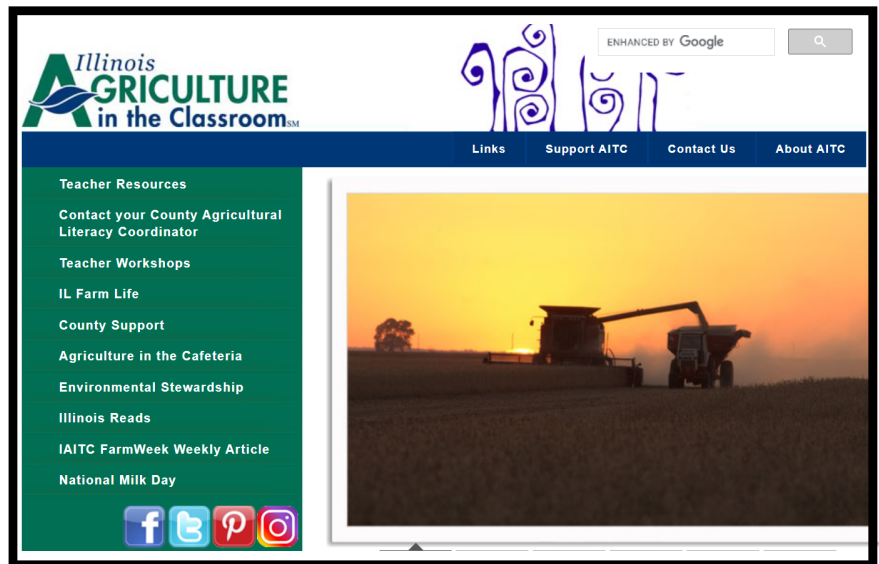
Illinois
AGRICULTURE
in the ClassroomSM

Online Resources

From lesson plans and STEM activities, to recipes and chicken egg incubation video series, our website and blog have the resources you need to incorporate agriculture into your content area classroom.

Website: www.agintheclassroom.org

- All lesson plans with their corresponding activity templates and worksheets
- County Ag Literacy Coordinator contact information
- Videos from IL farmers
- Ag Mags and Readers
- List of suggested ag-relevant books



Blog: www.beyondthebarndoor.wordpress.com

- Everyday Ag: daily themed lessons with K-3, 4-6, and STEM activities
- Scrambled States: similar to Everyday Ag, but with a focus on commodities of each state
- Lessons, family/classroom/cooking challenges, virtual field trips, and virtual author visits with monthly themes
- Videos: summer teacher training, IL Eggs in the Classroom series, "Right This Very Minute" series with IL farmers, "Grow With Us" small family farm series, and book recommendations



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Additional resources for these activities can be found at
<http://iaitc.co/sai21>



Math



Literacy

FUTURES FARMING

Grade Level

4-8

Length of Lesson

45 minutes

Objective

By the end of this lesson, students will have a better understanding of the challenges farmers face and be able to demonstrate simple math functions.

Materials Needed

- 1.4 oz bags of M&M's (per student)
- Calculator
- Copies of student worksheets

Standards

Common Core

CCSS.ELA-

Literacy.RI.4.2; RI.4.6;

W.5.1; SL.4.1

CCSS.Math.Content.4.OA.

A.3; 7.SP.A.1

Lesson Summary

This lesson is a hands-on activity designed to help students have a better understanding of marketing farm commodities by selling them (represented by M&M's candy) for a profit! Students will use basic math functions and critically think through challenges that farmers face when marketing commodities.

Suggested Sequence of Events:

1. Read through the [Corn](#), [Soybean](#), and [Wheat](#) Ag Mags to learn about common Illinois commodities. Interactive online versions can be found on our website.
2. Complete the activity following the procedures:
 - Pass out the student worksheets (available on our website) and read through the introduction and definitions.
 - Pass out the bags of M&M's. Make sure to tell them to **NOT** open the bags!
 - Have them fill out the "M&M estimator" section on their worksheet.
 - Explain to them that each color represents a different commodity they are 'growing.'
 - Revisit the term "future" and read the "Farmer's Dilemma" prompt as a class. Give students a minute to think and answer individually, then have them share their responses with a partner, and then share as a whole class. (Answer on "Teacher Resources" page)
 - Have students finish the rest of the student worksheets. They can eat their candy (with your permission, of course!) when they complete their worksheet and found how much profit they earned from their 'crop.'
3. Whole class discussion and reflection of activity. Here are some possible discussion questions:
 - How many of you realized that a farmer only makes money at certain times of the year?
 - How is the method of payment different than when some of your parents receive their paychecks?
 - What are some school subjects a farmer must be familiar with or understand well?
 - How would budgeting funds come into play in a farmer's family life?

TEACHER RESOURCES

Extension Ideas:

- As a class, discuss your students' answers at the end of the worksheet. Figure out who made the most profit and who owed the most. Explain why these students made the most or lost the most. Compare and contrast each student's outcome. Focus on the details and describe the differences and similarities.
- Put students into groups and have them calculate the averages of their: total M&M's, M&M's of each color, \$ made from their pre-sold, \$ made not pre-sold, and overall \$ made.
 - Have them discuss these questions in their groups
 - What trends do you notice in your group?
 - In general, did the group take more risks, or were they less risky?
 - Why is it important to calculate averages? Would this help in determining the risk?
- Have students create a bar graph to show a side-by-side comparison of each color in their bag. Have them create a second bar graph to show how many colors were pre-sold and sold.
- Have students create a pie chart to show the percentage of the overall total for each color.
- Have a local farmer come in to talk to the class about how they sell their crop in relation to the activity.
- Have students write two to three paragraphs explaining the main idea of this activity. They should use details from the text and lesson to help support their explanation.
- Have students use the information from the unit to chart statistics from their population of M&M's. Explain the odds of drawing each color from the bag at random. Use this data to draw inferences. What are the odds of randomly selecting each color? Which is most likely?
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!

Student Worksheet, "The Farmer's Dilemma" Answer:

There might be a drought, flood, or wind damage that could hurt the farmer's yield. He or she might not harvest 150 bushels of corn. In order to make money, that farmer must have the number of bushels he or she sold ahead of time, otherwise he or she loses money. It is like borrowing money: someday you have to pay it back. Remember, the farmer is taking a risk like the students are doing with their candy. Imagine taking a risk with thousands of dollars, not just candy.



COLORS ON YOUR PLATE

Grade Level

3-5

Length of Lesson

One to two class periods

Objective

By completing this activity, students will have a better understanding of nutrition and what food groups should fill up their plates.

Materials

- Copy of [*Auntie Yang's Great Soybean Picnic*](#) by Ginnie Lo
- Paper plates
- Markers, crayons, colored pencils
- Access to the internet (optional)

Standards

Common Core

CCSS.ELA-Literacy:
RI.K.4; RI.1.5; RI.2.5;
RI.3.5; W.4.3; SL.K.1a;
SL.K.2; SK.K.6;

ISSS

SS.G.2.2-3; SS.G.2.5;
SS.G.3.3

Lesson Summary

This lesson uses paper plates to create a fun way for students to strengthen their understanding of nutrition. This lesson is great to also teach about soybean varieties and introduce cultural nutrition.

Suggested Sequence of Events:

1. Read through the AITC [Soybean](#) and [Nutrition](#) Ag Mags to learn more about soybeans and nutrition. Interactive versions can be found on our website.
2. Complete the activity following the procedures:
 - Read *Auntie Yang's Great Soybean Picnic* out loud to the class.
 - Ask students to observe the pictures and the details of the illustrations. After you're done reading, ask if they noticed anything different about these illustrations from other books. (The illustrations are all on plates!)
 - Go to www.myplate.gov/life-stages/kids and talk about what types of foods should fill up students' plates.
 - Have students think of the types of foods that would fit into each section on their plates. Make a list on the board or have them individually brainstorm and share.
 - Give each student a paper plate.
 - Have students pick their favorite foods that would fit into each category. Once they have decided, have them draw and color those foods on their paper plates.
3. Whole class discussion and reflection of activity. Pair students together and have them share what is on their plates!

TEACHER RESOURCES

Extension Ideas:

- Read [*Pod to Plate: The Life Cycle of Soybeans*](#) by Julie D. Blunier.
- Have students create a comic strip or flip book showing the life cycle of a soybean.
- Show a labeled diagram of a soybean plant.
- Watch a YouTube video showing a soybean farm!
- Invite a soybean farmer into your classroom to talk about soybean farming.
- Learn about the different varieties of soybeans.
- Look up recipes that use varieties of soybeans and look into the history of that recipe. What part of the world inspired these recipes?
- Learn about different species of pollinators that are important for soybean growth.
- Go to www.agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!



MILK PLASTIC

Grade Level

4-6

Length of Lesson

30 minutes

Objective

By the end of this lesson, students will have a better understanding of how sensitive the fats and proteins of milk are to new substances.

Materials Needed

- Milk (1 cup per student)
- White vinegar (4 tbs per student)
- Small bowls
- Spoons
- Strainer(s)
- Paper Towels
- Measuring cups
- Food coloring and cookie cutter shapes (optional)

StandardsCommon Core

CCSS.ELA-

Literacy.RI.4.3; RI.5.3

NGSS

5-PS1; MS-PS1

Lesson Summary

This lesson is a fun, hands-on activity designed to help students understand how proteins are sensitive to acids.

Suggested Sequence of Events:

1. **Set Up:** Complete this as a demonstration, group activity, or individual activity depending on time and materials. If you're using this as a student activity, make sure students use caution as the milk can be hot and burn skin in the first few steps.
2. Read through the [IAITC Dairy Ag Mag](#) to learn more about milk and other dairy products! Interactive online versions can be found on our website.
3. Complete the activity following the procedures:
 - Observe the milk and vinegar solutions, noting their color, texture, scent, etc.
 - Measure 1 cup of milk into a microwaveable bowl and microwave for 1.5 minutes. The milk should be hot but not boiling.
 - Stir in 4 tablespoons of white vinegar into the milk and stir for 1 minute. The milk will start to form clumps!
 - Carefully pour this substance into the strainer. Use your spoon to push the liquid out. This may take a little elbow grease!
 - Transfer the remaining "plastic" to a paper towel and continue to press, making sure all the liquid is out.
 - Have fun and mold the plastic into a shape either by hand or using a cookie cutter. Use food coloring to add some flare!
 - Set the formed plastic aside and let it dry for 2 days.
 - Compare and contrast the original ingredients to the final product.
4. Whole class discussion and reflection of activity. Here are some prompting questions:
 - Describe how the milk reacted when you first added the vinegar (step number 2).
 - What happened when you began pressing the liquid out of the clumped milk?
 - Why do you think the milk turned into a "plastic"? Read the background information on the teacher resources page and share with your students.

TEACHER RESOURCES

Background Information:

This activity doesn't produce an actual plastic, but instead a substance called casein. Casein comes from the Latin word meaning "cheese" and is one of the several proteins that are found in milk. The acid from the vinegar does not mix with the casein in the milk, causing clumps to form. Basically your end product, the milk "plastic", is the casein proteins from the milk all clumped together.

True plastics are polymers, which are a little different than the casein substance. A polymer is a chemical compound that is made up of long chains of repeating, identical molecular units. Keep in mind that not all polymers are plastics but all plastics are polymers.

Extension Ideas:

- Have students turn their milk plastic into ornaments, toys, or gifts for their family or friends.
- Have students mold their milk plastic into a shape related to agriculture.
- Have students write the steps of this activity out, in order, including descriptive language.
- Have students demonstrate their understanding by explaining what happened in the activity using a variety of ways: draw a comic strip, create a fictional narrative, film a short video, write a lab report, etc.
- Take a closer look at polymers (plastics). What are other types of polymers? How does this milk "plastic" compare to other plastics? (Making slime is also another fun activity that focuses on polymers.)
- Scientific Inquiry: Take the experiment to the next level and have students make predictions and test different variables. (Use our Scientific Inquiry worksheet to help guide them through their experiment.)
 - Does the amount of vinegar make more casein?
 - What would happen if you used skim milk or soy milk?
 - What if you used other types of vinegars?
 - If the acid from the vinegar caused the reaction, will acids from citrus and fruits cause the same reaction?
- Read "[Clarabelle: Making Milk and So Much More](#)" by Cris Peterson. Look at the pictures and have students analyze the images.
 - Have students write a short story or create a comic strip from Clarabelle's perspective.
- Take a field trip to a dairy farm and learn about dairy farming.
- Invite a dairy farmer into the classroom.
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!



MY LITTLE SEED HOUSE

Grade Level

K-4

Length of Lesson

45 minutes

Objective

By the end of this lesson, students will have a better understanding of the process of seed germination.

Materials Needed

- [The Tiny Seed](#) by Eric Carle
- Soybeans or other large seeds
- Resealable baggies
- Cotton balls
- Scissors
- Staplers
- Spray bottle(s) with water
- Coloring utensils
- Copies of seed house template

Standards

Common Core

CCSS.ELA-Literacy.CCRA.R.1

NGSS

K-LS1-1; 2-LS2-1

Lesson Summary

This lesson is designed to give students a hands-on activity that shows how seeds germinate. Students will create their very own “seed house” which allows them to observe the process of seed germination!

*Activity adapted from [National Ag in the Classroom](#)

Suggested Sequence of Events:

1. Read through the [IAITC Soybean Ag Mag](#) to learn more about soybeans! Interactive online versions can be found on our website.
2. Pre-activity Engagement:
 - Ask your students if they can name any foods that come from plants and list them on the board.
 - Then ask them where those plants come from. If they start as seeds, what do those seeds need to start growing? Again, list their ideas on the board.
3. Complete the activity following the procedures:
 - Read *The Tiny Seed* by Eric Carle as a whole class to snag student interest and introduce them to seed growth. When you’re done, ask your students what the tiny seed needed to grow into a giant flower! Compare what they learned from the story to their original ideas listed on the board.
 - Give each student a copy of the seed house template and have them color their house and then carefully cut out around the house and cut out the square in the middle.
 - While they are coloring and cutting, hand out the rest of the supplies. Each student should get several soybeans (or other large seeds), a resealable baggie, and 5-6 cotton balls.
 - Use the spray bottle to moisten their cotton balls.
 - Have them place the cotton balls in the baggie and then the seeds on top of the cotton balls.
 - Close the baggie and staple it to the back of the seed house.
4. Whole class discussion and reflection of activity.
 - Talk about the connection between planting seeds and growing food.

TEACHER RESOURCES

Extension Ideas:

- Have students recall from Eric Carle's *The Tiny Seed* book what helped the seed grow and what hurt the seed. Can they think of anything else that could be helpful or harmful? Why is this an important thing for farmers to know?
- Have students record their observations every few days, either through pictures or measuring growth with a ruler.
- Cover a seed house with black paper and once other roots start sprouting, check if the seeds under the black paper also started sprouting. Do seeds need sun to germinate? (Compare to how the sun is out in the winter but we can't grow plants because it's too cold.)
- Once the seeds start germinating, remove the seeds from the seed house and plant them either in little pots with soil or outside in a designated area.
- Read [*Seed, Soil, Sun: Earth's Recipe for Food*](#) by Cris Peterson to dig deeper into plant life cycle, growth, and harvest. Look at the pictures and have students analyze the images.
- Introduce the process of photosynthesis and how plants get their food!
- Watch a time lapse video of seeds growing.
- Talk about all the types of plants that grow from seeds. What do we use those plants for?
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!



Picture from NAITC original lesson.



BIODEGRADABLE PACKING PEANUT

Grade Level

4-6

Length of Lesson

20 minutes

Objective

By the end of this lesson, students will have a better understanding of biodegradable resources.

Materials Needed

- Cornstarch
- Water
- Paper cups (1 per student)
- Spoons (1 per student)
- Microwave access

Standards

NGSS

2-PS1-2; 5-PS1; MS-PS1

Lesson Summary

This lesson is a fun, hands-on activity designed to help students understand that common products can be made with agricultural products and can be biodegradable so that we can reduce waste and pollution.

Suggested Sequence of Events:

1. Set Up: Depending on your class age and size, you could measure out the ingredients into separate cups for students ahead of time. Each student needs 1 tablespoon of cornstarch and 1 teaspoon of water.
2. Read "[Corn](#)" by Gail Gibbons to snag student interest.
3. Read through the [AITC Corn Ag Mag](#) to learn more about corn and its many uses! Interactive online versions can be found on our website.
4. Complete the activity following the procedures:
 - Hand out a paper cup, a spoon, cornstarch, and water.
 - Add 1 tablespoon of cornstarch to the cup. Then, add 1 teaspoon of water to your cup and use the spoon to stir into a paste.
 - Once mixed, you can try to form the peanuts into shapes.
 - Microwave the mixture for 20 seconds.
5. Whole class discussion and reflection of activity. How could this type of product be more beneficial to our environment? Explain how this product is considered a renewable resource.

TEACHER RESOURCES

Background Information:

Unlike Styrofoam packing peanuts, cornstarch packing peanuts are biodegradable and decompose in water, leaving no toxic waste. The polymers, long-chain molecules, that make up corn packing peanuts are polymers that occur naturally in nature as opposed to Styrofoam peanuts being made up of synthetic, or man-made, polymers. Corn, being a plant, is a renewable resource that we could use to reduce the amount of non-renewable and non-biodegradable products!

Extension Ideas:

- Turn this into an inquiry experiment and play around with the measurements of the cornstarch and water and also with the 'cooking' time in the microwave. Will changing these variables change the time it takes for the peanuts to breakdown?
- Complete our "Packing Peanuts" activity and compare their home-made corn packing peanut with the others in that activity.
- Test the protectiveness of corn packing peanuts vs. Styrofoam packing peanuts. Test them by packing a cardboard box with an egg and dropping them from various heights. Have them create a hypothesis and the make sure they test the materials with multiple trials at each height.
- Define and discuss the words "biodegradable," "decompose," and "toxic waste." Dig deeper and look at the by-products and wastes from making various materials.
- Brainstorm as a class and make a T-Chart on the board and list renewable and non-renewable resources.
- For older students, have them research what products can be made renewable, but are still primarily made with non-renewable resources. (Ethanol, corn packing peanuts, plastics, etc.)
- Learn more about other common corn-based products.
- Invite a corn farmer into the classroom to talk about types of corn, their uses, and what it takes to be a corn farmer.
- Try making corn packing peanuts using [this](#) recipe and compare to the ones you just made! Available at: <https://getawaytips.azcentral.com/how-to-make-packing-peanuts-12133405.html>
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!



LINCOLN'S PATENT

Grade Level

4-8

Length of Lesson

45-60 minutes

Objective

By the end of this lesson, students will learn more about how to use primary sources to research our past.

Materials Needed

- Internet access
- Copies of student worksheets

Standards

IL Learning Standards
for Social Science

SS.H.2.4-5

SS.H.3.6-8.LC

SS.H.3.6-8.MdC

Lesson Summary

This lesson is designed to help students learn more about Lincoln and his patent for a device to lift boats higher in the water. Students will also learn about the importance of primary sources in researching our past.

Suggested Sequence of Events:

1. Prior to the Lesson: Students should know basic facts about Abraham Lincoln's life, and they should be familiar with what a patent is prior to starting this lesson. See the Teacher Resources page in this lesson for additional ideas and resources related to this background knowledge.
2. Complete the activity following the procedures:
 - Read through the introduction on the Teacher Resources page and show the video.
 - Once students are familiar with Lincoln's patent, pass out the student worksheets to allow students to analyze the letter sent from the Patent Office to Lincoln regarding his patent.
 - Give students time to complete the analysis questions.
 - STEM Extension: If time allows, ask students to rethink Lincoln's invention using technology we have available today. How could they rethink and repurpose inventions since Lincoln's time to come up with a new and improved version of his patented invention?
 - Pass out the "Rethinking Lincoln's Patent" worksheet and ask students to draw and explain their ideas on the page.
3. Whole class discussion and reflection: Ask students to share what they learned through closely reading this primary source. How are primary sources useful to those studying our history?

TEACHER RESOURCES

Introduction:

Abraham Lincoln, the 16th President of the United States, is the only U.S. President with a patent. Lincoln's patent was for a flotation system used to lift longboats stuck in sandbars. There is no evidence that Lincoln's patent was ever actually used on a boat. Let's watch this short video from the National Museum of American History to learn more about Lincoln's invention and see a model that Lincoln had made to earn his patent: <https://vimeo.com/152478552> (2:22 long)

Background Information Resources:

- According to the United States Patents and Trademark Office (USPTO), a patent is, "a property right granted by the government to an inventor for a new, useful, and nonobvious invention." The USPTO has an excellent student website with patent-related resources: <https://www.uspto.gov/kids/>
- The USPTO also has a great video about how the patent application process works, and the importance of patents to innovation in our world, which can be found here: <https://youtu.be/3T-NBDGovno>
- Smithsonian Magazine has an excellent article on Lincoln's patent that would provide additional background knowledge, available here: <https://www.smithsonianmag.com/history/abraham-lincoln-only-president-have-patent-131184751/#:~:text=Lincoln's%20patent%2C%20No.,an%20Illinois%20congressman%20in%20Washington.>

Extension Ideas:

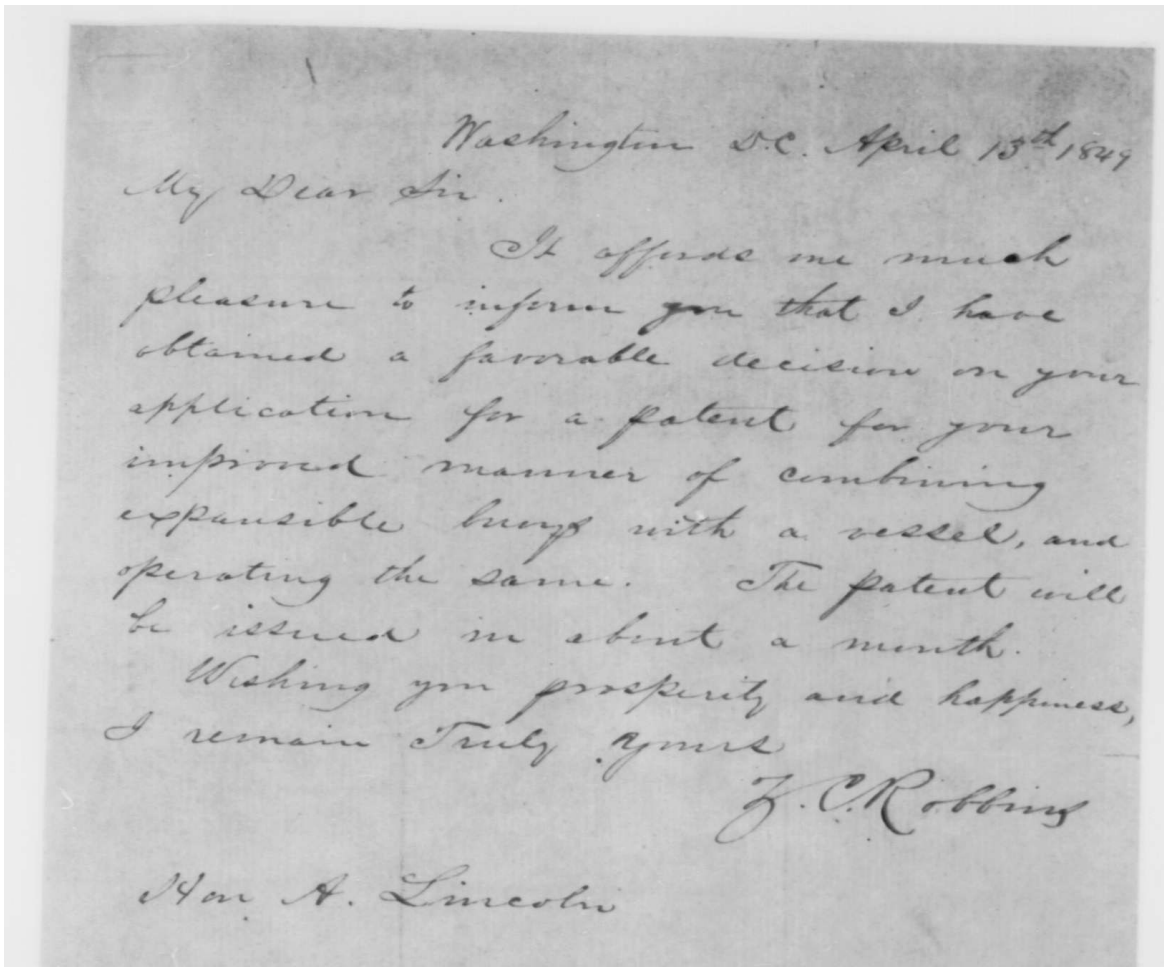
- Have students take on the perspective of Abraham Lincoln and write a return letter to Zenus Robbins. What questions or comments would Lincoln have after reading the letter?
- Have students infer the story surrounding the letter and create a non-fictional comic strip.
- Although Lincoln was never a farmer himself, he understood the importance of agriculture to our growing nation. His patent for a flotation device to assist longboats stuck on sandbars was created because of the importance of transporting agricultural goods along Illinois rivers. There are many good books about Lincoln. We especially like *The Superlative A. Lincoln*, by Eileen R. Meyer, which has a great poem about Lincoln being the "most distracted farmer." We also love *Lincoln Clears a Path: Abraham Lincoln's Agricultural Legacy*, by Peggy Thomas.
- Visit the United States Department of Agriculture (USDA) website to learn more about Abraham Lincoln's agricultural legacy. One of his most important accomplishments was forming the USDA. <https://www.nal.usda.gov/topics/lincolns-agricultural-legacy>
- River transportation is still an important issue in Illinois. Today, our rivers have locks and dams to allow large barges to transport goods up and down our rivers. Have students learn more about these vital transportation systems and how they impact our lives in unseen ways.
 - Compare Lincoln's patent to machinery and infrastructure, like locks and dams, that we use today.
 - Have students share why riverways are an important part of agriculture.
- Our [Illinois History Ag Mag](#) would pair well with this lesson. An online interactive version is available on our [website](#).
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!



LINCOLN'S PATENT

STUDENT WORKSHEET

Below is an image of the original letter sent from Zenas Robbins to Abraham Lincoln regarding Lincoln's patent application. The letter is a *primary source*. A primary source is an artifact of some sort that was created by a person with immediate, first-hand knowledge of a topic or event. Historians use primary sources to better understand our history through the eyes of the people who actually lived it.



Here is a transcript of the same letter:

Washington D.C. April 13th 1849

My Dear Sir.

It affords me much pleasure to inform you that I have obtained a favorable decision on your application for a patent for your improved manner of combining expansible buoys with a vessel, and operating the same. The patent will be issued in about a month.

Wishing you prosperity and happiness, I remain truly yours.

Z.C. Robbins

Hon A. Lincoln



LINCOLN ' S PATENT

STUDENT WORKSHEET

Analyzing a Primary Source: Hand Written Letter

You are going to complete a close reading of Zenas Robbins' letter to Abraham Lincoln. A close reading is a careful, critical analysis of a passage or text to develop a better understanding of the meaning of the text without relying on other information.

Use the questions below to help you analyze this text. You will need to read the letter more than once to fully understand it and answer all the questions. You may use either the original letter or the typed transcript to complete these questions.

READ THROUGH #1

The first time reading through the text is to help you become familiar with the general features and ideas.

Read the letter. As you're reading, underline any words you don't recognize.

Who wrote the letter?

Find the date the letter was written and circle it.

Does the author of the letter know Abraham Lincoln? What evidence in the letter supports your answer?



LINCOLN 'S PATENT

STUDENT WORKSHEET

READ THROUGH #2

The second time reading through the text challenges you to dig deeper and focus on more specific or individual parts.

Read the letter again. Choose one sentence or phrase that you find interesting or important and write those words in this box.

Why did this sentence/phrase attract your attention?

How does this sentence/phrase help you understand what this letter is about?

FINAL ANALYSIS

1. Write one question you still have about the letter.
2. How could you find the answer to this question?
3. What was the purpose of this letter?
4. Why might this letter be considered an important historical document?



RUMINATION NAVIGATION

Grade Level

4-6

Length of Lesson

45-60 minutes

Objective

By the end of this lesson, students will have a better understanding of the digestive system of ruminant animals.

Materials Needed

- Containers (resealable snack size baggies or solo cups)
- Plastic spoons
- [Paint cone strainers](#)
- Paper Towels
- Carbonated drink
- Water
- [Potato Sticks](#)*
- Pop Rocks candy
- Measuring cups: 1/4 cup, 1/8 cup, 1 tablespoon, 1/2 teaspoon
- Permanent markers
- Copies of student worksheet

Standards

NGSS

4-LS1-1; 5-PS1-4; 5-PS3-1; MS-LS1-3; MS-LS1-7

Lesson Summary

This lesson is a fun, hands-on activity designed to help students understand the process of rumination and how digestive systems break down food for energy. It is best to be used as an extension lesson as some understanding of the ruminant digestive system is beneficial to understand the steps in the activity.

*If you don't have access to potato sticks, any type of potato chip or even a half slice of bread would work just fine.

Suggested Sequence of Events:

1. **Set Up:** To save time, have the materials divided so that all the materials for one group are together. If time allows, you can have the 1/4 cup of potato sticks measured and ready in a container.
2. Read through the IAITC [Beef Ag Mag](#) and [Dairy Ag Mag](#) to learn more about two important ruminant animals! Interactive online versions can be found on our website.
3. Complete the activity following the procedures:
 - Divide students into groups of 2-3 and have one person from each group collect the materials.
 - Hand out the student worksheets so that each student has their own, and read through the introduction together.
 - Read through the "Set Up" on the first page of the student worksheet as a whole class so students are aware of what they need to do first.
 - Students need to label their baggies and strainer, measure the 'digestion' materials and put them into the appropriate baggies, and then follow the steps on their student worksheets.
 - When finished, have students clean up their materials according to your classroom instructions!
 - Once cleaned up, have students work together, or individually, to answer the questions on the student worksheet.
4. Whole class discussion and reflection of activity.

TEACHER RESOURCES

Extension Ideas:

- Have students color code the steps to the cattle diagram by coloring in the instruction shape and the matching digestive system part the same color.
- Have students write map directions for the route food takes in ruminant digestive systems.
- Read through our “Moovin’ On Through” non-fiction text that explains the different parts of the ruminant digestive system in more detail.
- Compare and contrast the ruminant digestive system to a monogastric digestive system.
- Have student define the word ‘rumination’. Compare that definition with the definition for ‘monogastric’.
- Invite a beef cattle farmer into your classroom to talk with your students!
- Learn more about beef by-products.
- Learn about the history of cattle in the United States.
- Have students share their favorite beef recipes.
- Learn about what cattle eat and how they are cared for by farmers and ranchers.
- Research cattle breeds in the United States and compare to cattle breeds around the world.
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!



RUMINATION NAVIGATION

STUDENT WORKSHEET

Introduction: Food is made up of ingredients that provide nutrients and minerals to our bodies! All animals, including humans, need these nutrients and minerals for our bodies to function properly and to have energy. The digestion system is responsible for breaking down the food we eat, taking as many of those nutrients and minerals as the body needs, and then gets rid of what is not needed. Unlike humans, ruminant animals (like sheep, cattle, goats, and even camels) have a more intricate digestive system. This is because they eat plants, like grass, that is harder to break down than the foods we eat. Let's get a hands-on understanding of what happens to the food during rumination.

Set Up

Let's get the materials set up so that you can easily navigate your way through the ruminant digestive system!

1. Check to make sure you have all of the following materials:

- 5 baggies
- 6 paper towels
- 1 strainer
- Carbonated drink
- Pop Rocks candy (microorganisms)
- Food
- Water
- Spoon

2. **Label** your materials so that you know which material represents which part of the digestive system.

- Baggie 1: Mouth
- Baggie 3: Omasum
- Spoon: Esophagus
- Baggie 4: Abomasum
- Baggie 2: Rumen
- Baggie 5: Small Intestine
- Strainer: Reticulum
- 2 Paper towels: Large Intestine

3. Now we need to measure out some of our materials and put them into the correct baggies!

- Rumen: 1/4 cup water
- Abomasum: 1/8 cup carbonated drink
- Omasum: 2 folded paper towels
- Small Intestine: 2 folded paper towels

Now that your materials are set up, it's time to ruminate! The instructions on the next pages will refer to all the containers as the **scientific name** of the digestive system section they are modeling. Start with the mouth and follow the arrows!



RUMINATION NAVIGATION

STUDENT WORKSHEET

MOUTH

Add 1/4 cup of food to the **mouth**. Then add 1 tablespoon of water and seal the baggie!

Keep the baggie closed and use your fingers to break apart the food into smaller pieces. Form the food into a wad!

ESOPHAGUS

Using the **esophagus**, move the wad of food from the mouth and into the rumen!

RUMEN

The rumen liquids and walls are home to millions of microorganisms that are now starting to eat the food that the cattle just swallowed. Add 1 teaspoon of the Pop Rocks candy and listen to them 'eating'!

Seal that baggie closed and set it on your table. Lightly pull up on the top of the baggie and then let go. What just happened? The rumen just had a contraction which moved the liquids, food, and microorganisms around so that they all come in contact. Kind of like stirring ingredients together when cooking!

RETICULUM

A contraction spilled some rumen liquids and a wad of food into the reticulum. Put the **reticulum** over the opened **omasum**. Then pour everything from the **rumen** into the **reticulum**.

The wad of food is too big to pass into the omasum and needs to be chewed more. Use the **esophagus** to "regurgitate" the wad of food to the **mouth**!

MOUTH

Close the mouth and use the bottom of your measuring cup to lightly smash the food into smaller pieces—it will get a little mushy!

This is called "chewing the cud"



RUMINATION NAVIGATION

STUDENT WORKSHEET

LARGE INTESTINE

Carefully drop the undigested food onto the large intestine. Microorganisms in this area will break down anything of value that's left in the food. Add 1/2 teaspoon of Pop Rocks candy.

The remaining undigested food is considered waste and excreted. Yep—it's the poo!

SMALL INTESTINE

Carefully dump everything from the **abomasum** into the **small intestine!** The small intestine will absorb the rest of water.

ABOMASUM

Carefully dump the wad of food from the **omasum** into the **abomasum!**

The abomasum is most like the human stomach and produces acidic liquids to break down the food even further!

OMASUM

Use the paper towels to absorb more liquid from the wad of food.

ESOPHAGUS

Using the **esophagus**, move the wad of food from the **mouth** and into the **omasum!**

Form the food into a wad!

MOUTH

In real life, the cow would re-chew the food, swallow it, and the wad of food would go back into the rumen to be further broken down by the microorganisms. The food can only pass through the reticulum once it's broken down, or digested, enough. This would be a repeat of the previous page, but today we are going to fast forward to the omasum!

Keep in mind that nutrients and minerals are being absorbed from the food, through the walls in each section, and are sent throughout the body for use!

PIT STOP!

(CONTINUE HERE)



BACON BLACKOUT POETRY

Grade Level

4+

Length of Lesson

45 minutes

Objective

By the end of this lesson, students will be able to create poetry using non-fictional texts.

Materials Needed

- Access to paper copies or online version of our AITC Pork Ag Mag
- Black markers

Standards

Common Core

CCSS.ELA-Literacy.RL.4.2;
RL.4.5; RI.4.7; W.4.5;
L.4.4; RL.5.6; RL.5.7;
RI.5.1; RL.6.4; CCRA.R.4;
CCRA.R.6; CCRA.R.7

Lesson Summary

This lesson is designed to introduce or strengthen students' skills of writing poetry. Blackout poetry is a great beginning to a poetry unit because it allows students to create a poem by removing words from an already written piece of non-fiction!

Suggested Sequence of Events:

1. Read through the [AITC Pork Ag Mag](#) to learn more about pork and familiarize students with the text they will be using!
2. Complete the activity following the procedures:
 - Make copies of the different sections of the Pork Ag Mag and have students choose which section they would like to focus on.
 - Once students have chosen their section, have students read through it a few times to become more familiar with the material.
 - Students will begin to create a poem by "blacking out" any words and phrases that they do not want to use. The words that are left will become their poem. Note: For some students, it may be a good idea to have them start by using a pencil. Once they are sure of their choices, they can permanently black out the words with a marker.
 - Once students have chosen their words, they should start creating their poem on a separate piece of paper or on a computer. Depending on your students, you may want to create different parameters. Typically for blackout poems, students must use the words in order as they were originally written. Feel free to change this "rule" if necessary. You can also consider allowing students to change the form of words, such as allowing them to change verb tenses or making singular nouns into plural nouns. You can also encourage students to add any punctuation they feel necessary for their poem.
 - Once they're happy with their poem, students can use some of the words from their poem to create a meaningful title.
3. Whole class discussion and reflection of activity. Here are some discussion starters: What is the topic or focus of your poem? What did you learn about pigs and pork through this activity? How did your poem change from the original text? What did you find challenging about this activity?

TEACHER RESOURCES

Extension Ideas:

- Have students read their poems out loud to the class.
- Have students who chose the same section compare their poems.
- After students have blacked out the text to form their poem, challenge them to do another, and this time, create an image that relates to their poem.
- Use our “Ag Mag Scavenger Hunt” lesson to help your students analyze the text even further.
- Have students create other blackout poems using their choice of any of our [AITC Ag Mag](#) topics.
- Read “[Awesome Agriculture: Pigs an A-to-Z Book](#)” by Susan Anderson & JoAnne Buggey. Look at the pictures and have students analyze the images.
- Introduce or review the word ‘livestock’ to your students and talk about why farmers raise animals. What do we use pigs for?
- Learn about all the products we get from pigs. Why are pigs so important for us?
- Find various recipes that use pork products. Dig deeper and compare pork dishes from around the world.
- Watch a video that talks about what pigs eat and where they live. What do pigs need to be healthy?
- Learn about different pig species around the world.
- Invite a pig farmer into your classroom to talk about pig farming.
- Go to agintheclassroom.org to contact your County Ag Literacy Coordinator for free classroom sets of our Ag Mags!

Here is a blackout poem created from the section, “Farmers and the Environment,” from the Pork Ag Mag.

Words were kept in the same order. The author chose where to place the line and stanza breaks and added punctuation throughout the poem.



PIG MANURE!

Farmers are concerned about the environment—constantly looking for new ways to improve.

Manure on a pig farm:
a very important part of the agriculture cycle!
Plants grow!
They pull nutrients from the soil!
The nutrients need to be replaced!

PIG MANURE! =
a great source of nitrogen and phosphorus.

Farmers inject manure with a machine.
Increase the nutrients in the ground,
reduce runoff and odor.

The farmer is ready to apply manure.
Ready for application!



Science



Literacy

WHEAT MILLING

Grade Level

K-4

Length of Lesson

45 minutes

Objective

By the end of this lesson, students will have a better understanding of wheat as a plant.

Materials Needed

- [Wheat Stalks](#) (available at agclassroomstore.com)
- Salt or Pepper Grinder

Standards

Common Core

CCSS.ELA-Literacy.RI.K.10; RI.1.6

CCSS.Math.Content.K.C.C.A.1

NGSS

K-LS1-1; 2-LS2-2; 3-LS1-3

Lesson Summary

This lesson is designed to help students identify the parts of a wheat plant while learning about its uses in various food products.

Suggested Sequence of Events:

1. Set Up: Gather enough wheat stalks for each student in your class or for small groups of students. Draw or print out a diagram of a wheat stalk as a guide for you and your students.
2. Read "[Farmer George Plants a Nation](#)" by Peggy Thomas to capture student interest.
3. Read through the [AITC Wheat Ag Mag](#) to learn more about wheat. Interactive online versions can be found on our website.
4. Complete the activity following the procedures:
 - Show students wheat stalks.
 - Go over the parts of the wheat stalk with the students to familiarize them with the parts so they can understand the directions for dissection.
 - Stalk—the entire plant.
 - Head—the part of the wheat plant that contains the kernels.
 - Beard—the bristle-like parts of the wheat plant that cover and protect the kernels.
 - Kernel—the seed from which the wheat plant is grown or that people harvest from the wheat plant to grind into flour.
 - Stem/Straw—the part of the wheat plant that supports the head and is known as straw after harvest.
 - Dissect the wheat using the following steps:
 - Break the head off the stem.
 - Make a straw out of the stem by breaking it to avoid the nodes.
 - Lay the wheat head flat on a hard surface and pat with your hand to shake out the kernels.
 - Have the students count their kernels.
 - Put the kernels of wheat into a salt or pepper grinder and have the students mill their wheat into flour. What simple machines are being used?
 - Talk about different ways to grind wheat. The Native Americans did it using rocks, etc. Have students design their own method of grinding wheat and then test their machines.

TEACHER RESOURCES

Extension Ideas:

- Read “[Bread Comes to Life](#)” by George Levinson. Then, have students find the gluten in wheat by chewing the kernels. Before there was chewing gum in the store, farmers made their own with grains of wheat!
- Ask the students to list some of the foods that can be made using flour. (*Bread, cake, cookies, brownies, pasta, crackers, etc.*)
- Have students listen to “[The Little Red Hen](#)” by Paul Galdone.
 - Bring in seeds, stems, flour, and bread and put them down in a random order. Have student pay attention to the steps the hen takes to plant her wheat . Have students work together to put items in the correct order.
- Have students label and color a wheat stalk.
- Discuss what wheat needs to grow (Light, water, air, and nutrients). Then, help students plant their own wheat.
 - As their wheat grows, you can continue to discuss this lesson by asking these questions:
 - How many days did it take for the wheat seeds to sprout?
 - What do the wheat plants look like?
 - What do the plants need to grow?
- Watch a video of wheat being harvested.
- Watch a video from a local farmer discussing wheat growth and harvest.
- Invite a wheat farmer into the classroom.
- Have students research each step of growing wheat and write a paragraph explaining what happens at each phase. How long does each phase take?
- Bring in different types of bread (sweet, rye, sourdough, white, etc) and have students sample each type. After sampling have students write about which kind they liked the best and why.
- Encourage students to try making their own bread at home.
- Have students do IAITC’s Soil Sam lesson, using wheat seeds for the “hair.”
- Go to agintheclassroom.com to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!





ODE TO A VEGETABLE

Grade Level

4-8

Length of Lesson

45-60 minutes

Objective

By the end of this lesson, students will be able to create multiple forms of poetry.

Materials Needed

- Copy of [Ode to an Onion](#), by Alexandria Giardino

Standards

Common Core

CCSS.ELA-Literacy.RL.4.5;
RL.5.2; RL.5.4; RL.5.4;
RL.6.4; RL.7.4; W.4.9;
W.5.9; W.4.3; W.5.3;
W.6.3; W.7.3

Lesson Summary

This lesson is designed to introduce or strengthen students' skills of writing poetry. Students will write multiple "odes" to vegetables using simple, common poetic forms. This lesson would work well in a larger poetry unit.

Suggested Sequence of Events:

1. Read through the [AITC Seasons Ag Mag](#) to learn more about specialty crop and vegetable production in Illinois.
2. Read *Ode to an Onion*, by Alexandria Giardino, to learn the (fictional) story behind Pablo Nerudo's poem "Ode to an Onion."
3. Depending on the age of your students, you may also choose to read some or all of Nerudo's poem, available both online and in the back of *Ode to an Onion*.
4. Complete the activity following the procedures:
 - Ask students to make a list of their favorite vegetables.
 - Next, have them choose a few of their vegetables and make a list of the qualities of each. You may also choose to have them practice using word webs or other graphic organizers utilized in your classroom.
 - Share the types and examples of different poetic forms provided (or choose your own) and ask students to choose a poetic form to use to write their "Ode to a Vegetable" poem.
 - For older students, and if time allows, you might have students write poems in more than one form.
5. Whole class discussion and reflection of activity. Ask students to share their "odes" to the small groups or the whole class. Discuss the different poetic elements and styles used by each student.

TEACHER RESOURCES

Background Information:

- Ode poems were originally written in Ancient Greece and were meant to be performed publicly. Later, English romantic poets used this form to express emotions using rich, descriptive language. In the present day, the term “ode” is used to describe an outpouring of praise for something. Modern odes have evolved over time to reflect many different styles and forms. There are many online resources to learn more about odes and read examples.
- Chilean poet Pablo Nerudo wrote a total of 225 odes, all of them about ordinary, everyday objects. They serve as a great example for students of how we can write poems about *anything!* Some of these odes were also about food, including tomatoes, corn, and artichokes. All are available at various places online and would serve as excellent resources for this lesson.

Extension Ideas:

- Incorporate this lesson into a larger poetry unit and/or study of poetic elements.
- Have students who chose the same vegetable compare their poems.
- Have students research other poetic forms and try to re-write one of their poems using this new form.
- Have students create other poems using their choice of any of our [AITC Ag Mag](#) topics.
- Invite a specialty crop farmer who grows vegetables into your classroom to talk about pig farming.
- Create a “Poetry Garden” bulletin board in your classroom to display students’ poetry.
- Incorporate student poems into your school garden project. Poems can be laminated and attached to stakes and placed in the garden near plantings of each vegetable.
- Go to agintheclassroom.org to contact your County Ag Literacy Coordinator for free classroom sets of our Ag Mags!

If students need some inspiration, share these examples with them:

- *Acrostic Poem: the first letter of each line is arranged vertically to spell a word, usually the topic of the poem.*

Example:

Can words capture the beauty of a carrot?

After months of growing, only just now ready to be pulled, no

Ripped, from the clutches of the warm brown earth, quickly brushed off and

Ready to snap between the molars of a hungry gardener.

Other vegetables stand no chance, when compared to the

Tremendous technicolor beauty of a fresh orange carrot,

Shaded from the sun for so long, but now ready to serve its final purpose.



Social
Studies



Literacy

APPLE PIE JOURNEY

Grade Level

3-6

Length of Lesson

50-60 minutes

Objective

After completing this activity, students will have a better understanding of how and where foods are grown and produced around the world.

Materials Needed

- Copy of [*How to Make an Apple Pie and See the World*](#) book by Marjorie Priceman
- Copies of student worksheets
- Crayons or colored pencils
- Individual World Maps (optional)

Standards

Common Core

CCSS.ELA-Literacy.RI.2.1- 4.1; RI.2-6.7; RI.4.2; RI.4.3; RI.4.6; RI.4.7; RF.4.4; W.4.3; W.4.7; SL.4.2

ISSS

SS.G.1.2; SS.G.1.K-3; SS.G.3.3; SS.G.4.5; SS.G.1.6-8

Lesson Summary

This lesson is designed to help students recognize and better appreciate that the ingredients from their favorite foods come from agriculture systems across the world.

Suggested Sequence of Events:

1. Read through the [AITC Apple Ag Mag](#) to learn more about trees. Interactive online versions can be found on our website.
2. Complete the activity by following these procedures:
 - Read *How to Make an Apple Pie and See the World*.
 - Ask your students if they have ever heard about any of the countries the main character visited. Ask them if they knew that other countries have farmers who produce food just like the U.S. does.
 - Pass out the student worksheet and explain that you're going to read the story to them again, but this time they will have a reading/listening purpose.
 - Pass out individual world maps if you have them. If individual world maps are not available, pull up a world map to project so all students can see.
 - Read through the directions on the student worksheets.
 - Read the story again, this time stopping to make sure students can identify the locations of the countries visited.
 - Have students ensure they followed all the directions on the worksheet.
3. Whole class discussion and reflection of activity.

TEACHER RESOURCES

Extension Ideas:

- Learn about the history of apple pies. Where were they first made?
- Research what variety of apple is best for baking. Are there different varieties that are better for specific uses?
- Have students re-write the story using a different recipe like a cheeseburger or banana split.
 - Once they're done with their story, have them get with a partner and track the voyage on a world map just like in this activity.
- Choose one ingredient from the story and have your students do a little more research to create a concept map. What countries farm this commodity? What farming techniques are used? What recipes around the world use this ingredient?
- Turn this activity into a stations activity to get your students up and moving. Give each station some information about the country being visited in the story.
- Have students identify the latitude and longitude of the places the main character visited.
- Learn how to say the names of the commodities in the languages from the countries visited in the story.
- Have students do a gallery walk with these [images](#) of what kids around the world eat for lunch in a week, available at <https://time.com/what-kids-eat-around-the-world-in-one-week/>.
- Watch this school lunches around the world [video](#), available at <https://www.youtube.com/watch?v=Po0O9tRXCyA>.
- Use this [interactive map](#) from National Geographic to show students the different climate regions around the world and how those impact the food we eat. Map available at mapmaker.nationalgeographic.org.
- Go to agintheclassroom.org to contact your County Ag Literacy Coordinator for free classroom sets of our Ag Mags!



APPLE PIE JOURNEY

STUDENT WORKSHEET

Directions: Complete the steps below using your blank world map!

1. Turn your map so that it is facing the correct direction. Then, draw a compass on the bottom, right side of the map. Make sure to label your compass with North, South, East and West.
2. As your teacher reads the story, locate the countries the main character visits and color in the country.
3. Label the countries. Make sure to spell their names correctly!
4. Draw the path of the route our main character takes.
5. Answer the questions below:

What countries did our main character visit?

Using your compass skills, navigate us through the route the main character took in the story.

The ingredients we use to make food are products that come from original sources. Match the ingredient our main character needed with its original source.

Sugar

Eggs

Apples

Cinnamon

Salt

Butter

Flour

Wheat

Kurundu tree

Cow

Seawater

Chicken

Sugar cane

Orchard



PUMPKIN CATAPULT

Grade Level

4-6

Length of Lesson

2 class periods

(1 day of building, 1 day of testing)

Objective

By the end of this lesson, students will learn more about the design and use of simple machines.

Materials Needed

- Large popsicle sticks
- Rubber bands
- Plastic Bottle Caps
- Hot Glue
- Assorted additional building materials
- Small pumpkin-shaped candy
- Protractors
- Container or bin (“wagon” for challenge)
- Copies of student worksheet

Standards

NGSS

4-PS3; 3-5-ETS1; MS-ETS1-1; MS-PS3-2

Lesson Summary

This lesson is designed to help students learn more about simple machines and provide opportunities to design and test their own pumpkin catapult. Additionally, there is a design for a large catapult made from PVC pipe that will launch small pumpkins up to 40 feet.

Suggested Sequence of Events:

1. **Set Up:** Teachers may also want to build their own example to inspire students’ creations.
2. Read [The Great Pumpkin Smash](#) by Lori Haskins Houran to capture student interest and introduce the concept of catapults.
3. Read through [AITC Pumpkin Ag Mag](#) to learn about pumpkins. Interactive online versions can be found on our website.
4. Watch a short pumpkin harvesting video to show students some of the machines used to harvest processing pumpkins in Illinois. Here is one good example: <https://youtu.be/5Ac98DrsKmY>
5. Complete the activity following the procedures:
 - Discuss the concept of a catapult and the simple machines used to make a catapult work.
 - Pass out the student worksheets to each student and read the “STEM Challenge” together. Explain that they will be trying to catapult a candy pumpkin into a container.
 - After passing out the necessary building materials have students brainstorm how the pieces work together and then draw a blueprint. They should do this before they start building.
 - Provide students time to build, discuss, and test their creations. *See Background Information on the Teacher Resources page.
 - Complete the STEM Challenge as a class and see whose catapult can launch the candy pumpkin into the wagon!
6. Additionally, the teacher could construct a PVC Pumpkin Catapult and have students experiment with launching small pumpkins outside.
7. Whole class discussion and reflection of activity. Pair students together and have them share their catapult designs with their partner. What variables can be changed to make the pumpkins launch farther?

TEACHER RESOURCES

Background Information:

A part of STEM fields is the testing that takes place behind the scenes! Your students are trying to launch a candy pumpkin into a container placed at a specified distance, determined by you. Students will need to test their catapults to determine the force needed to launch the pumpkin the correct distance. Meaning, what is the best angle or how many posicle sticks need to be stacked for the correct force. They will choose two angles to test and complete three trials for each, then find the average of those trials for each angle. This will help them determine the angle they need for the challenge.

Extension Ideas:

- Have students define the bolded words on their student worksheets.
- Talk about why the pumpkin doesn't stay in the air, what happens to the pumpkin's motion when it hits the ground, and what causes the pumpkin to travel a further distance.
- Add another variable into their tests and have students use objects of different weights to compare results.
- Read "[Pick a Pumpkin](#)" by Patricia Toht. Look at the pictures and have students analyze the images.
- Have students write pumpkin facts from the AITC Pumpkin Ag Mag on their catapults.
- Have students create a comic strip including pumpkin facts.
- Watch a time lapse video of a pumpkin growing.
- Watch a video from a local farmer discussing pumpkin growth and harvest.
- Take a field trip to a pumpkin patch and pick your own pumpkins.
- Take a closer look at squash bees and other pollinators. What is pollination? Why is it important for pumpkins?
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!



Catapult made with instructions



Catapult designed by a 1st grader



PVC Catapult



PUMPKIN CATAPULT

STUDENT WORKSHEET

STEM Challenge: There's been a machine breakdown! A farmer needs help getting his pumpkins into the wagon. Can you design and build a *Pumpkin Catapult* to launch those pumpkins into the wagon?

The **distance** and **speed** of the pumpkin is going to depend on the **force** of the machine. The force is determined by how far back your catapult is pulled before releasing.

How will you adjust the force of your catapult?

Look at the materials your teacher has given you for your build. Draw and **label** some possible designs (blueprints) for your catapult in the box below.



PUMPKIN CATAPULT

STUDENT WORKSHEET

Time for your **hypothesis**. This should include your ideas on the relationship between force of your catapult and the distance your pumpkin will travel.

My Hypothesis:

Just as scientists and engineers do, you are going to complete a series of tests before trying to get your pumpkin into the wagon! Fill out the information below as you complete your testing trials.

Angle: this is the number of popsicle sticks and/or the angle measured with a protractor.

Distance: this is the amount of space (in inches) measured from the base of the catapult to the spot where your pumpkin **landed** – this does NOT include where the pumpkin stops after rolling!



Angle of Launch =	
Trial 1	inches
Trial 2	inches
Trial 3	inches



Angle of Launch =	
Trial 1	inches
Trial 2	inches
Trial 3	inches

Now, calculate the average distance traveled for each angle you tested.

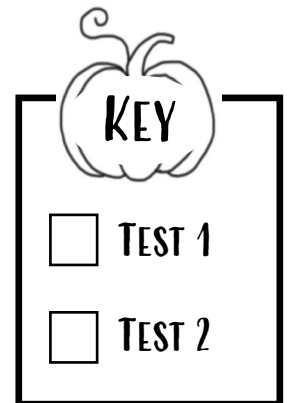
Lined area for calculations with two vertical red lines.



PUMPKIN CATAPULT

STUDENT WORKSHEET

Use the data you collected to create a visual representation of those measurements! You will need to add the information for the bar graph, and use two different colors to represent the two angle tests you completed. Make sure you label your graph!



Reflection Questions:

1. Why do scientists and engineers revise their original designs? Did you have to revise yours?
2. For this activity, what worked well and what was challenging?
3. Did your catapult work for getting the pumpkin into the wagon? Why or why not?
4. How would adding a heavier or lighter object change the angle needed for making it into the wagon?



PUMPKIN CATAPULT

BASIC INSTRUCTIONS

Materials:

- Seven (4) large popsicle sticks
- Four (4) rubber bands
- Plastic bottle cap
- Hot glue



Follow these steps to build a basic pumpkin catapult:

1. Stack five (5) popsicle sticks together and wrap rubber bands around each end until tight.
2. Stack the remaining two (2) popsicle sticks together and wrap a rubber band around one end until tight.
3. Spread apart the two (2) popsicle sticks on the end opposite the rubber band and insert the stack of five (5) popsicle sticks in between.
4. Push the stack of five (5) sticks down until it reaches the rubber band holding the two (2) popsicle sticks together.
5. Wrap another rubber band around the spot where the two (2) stacks of popsicle sticks meet.
6. Carefully glue a plastic bottle cap to the upper popsicle stick to create a pumpkin basket for your catapult.
7. Allow to dry, then place a candy pumpkin inside the bottle cap.
8. Use your finger to pull down the popsicle stick. Release your finger and see how far your pumpkin flies!

Now that you have built a basic catapult, how can you improve the design? Can you make a more powerful catapult with a new design?



SAY IT WITH SOIL!

Grade Level

5-8

Length of Lesson

45 minutes

Objective

By the end of this lesson, students will be able to demonstrate through writing how soil interconnects with all living things.

Materials Needed

- Soil Quotes**
- Copies of student Worksheet

Standards

Common Core

CCSS.ELA-Literacy.RI.4.3;
RI.4.4; RI.4.5; RF.4.3a;
SL.4.1; W.4.2; W.4.6;
W.4.7; W.4.8

NGSS

3-LS4-4; 3-LS3-2; 5-ESS3-1

Lesson Summary

This lesson is designed to help students learn about quotes from our history that highlight information about soil.

Suggested Sequence of Events:

1. Set Up: Cut the soil quotes from the quote pages (available on our website) into strips. Laminate for multiple uses.
2. Read "[This Land is Your Land](#)" by Woody Guthrie to set up a conversation about history and the land.
3. Read through [IAITC Soil Ag Mag](#) to learn more about soil and its history. Interactive online versions can be found on our website.
4. Complete the activity following the procedures:
 - Hand out the student worksheet and distribute one quote to each student.
 - Have students read the soil quote and answer the questions on the student worksheet.
 - What does the quote mean to me?
 - What did this quote mean to the author?
 - Has this quote withstood the passage of time
 - Why or why not?
 - Is this quote relevant in today's world?
 - Why or why not?
5. Have students share their writing with a partner, small groups, or the entire class.

**A handful of our soil quotes are included on the following Teacher Resources page for this lesson. These can easily be typed or copied and cut apart.

Go to www.agintheclassroom.org to find our complete list of soil quotes!

TEACHER RESOURCES

Soil Quotes:

“We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect.” -Aldo Leopold; 1949

“We are part of the earth and it is part of us...What befalls the earth befalls all the sons of the earth.” -Chief Seattle; 1854

“I know of no pursuit in which more real and important services can be rendered to any country than by improving its agriculture.” -George Washington; July 20, 1794

“The soil is the source of life, creativity, culture and real independence.” -David Ben Gurion, Hazon VeDerek; 1950’s

“Plowed ground smells of earthworms and empires.” -Justin Isherwood; 1990

“When tillage begins, other arts follow. The farmers, therefore, are the founders of human civilization.” -Daniel Webster; 1840

“I bequeath myself to the dirt, to grow from the grass I love; If you want me again, look for me under your boot soles.” -Walt Whitman; 1855

“We spend our lives hurrying away from the real, as though it were deadly to us. “It must be somewhere up there on the horizon,” we think. And all the time it is in the soil, right beneath our feet.” -William Bryant Logan; 1996

Extension Ideas:

- Have students read through all the quotes and choose their favorite. Why did they choose that quote? What does it mean to them?
- Have students create their own say it with soil quotes.
- Have students create a Bio Cube about one of the authors of the quotes.
 - Students can go to http://www.readwritethink.org/files/resources/interactives/cube_creator/ to fill out their own Bio Cube.
 - A few examples of authors to choose would be: George Washington, Franklin D. Roosevelt, Walt Whitman, etc.
- Invite an Illinois farmer into the classroom to talk to your class about soil health and sustainability within agriculture.
- Have students participate in a “Living Wax Museum”. They can dress up as the person they researched for their bio cube and then perform a short monologue for their peers.
- Have students write a paper about one or two of the quote authors.
- Read “[Sand and Soil: Earth's Building Blocks](#),” by Beth Gurney, and “[A Handful of Dirt](#),” by Raymond Bial, to teach students more about soil, its properties, and its importance to our planet.
- Complete our lesson “Soil Slurry” to deepen your student’s understanding of soil properties.
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!



Social
Studies



Literacy

SAY IT WITH SOIL

STUDENT WORKSHEET

1. My Quote:

2. What does this quote mean to me?

3. What did this quote mean to the author?

4. Has this quote withstood the passage of time? Why or why not?

5. Is this quote still relevant to today's world? Why or why not?



Science



Literacy

WATER CYCLE BRACELET

Grade Level

1-5

Length of Lesson

45 minutes

Objective

By the end of the lesson, students will have a better understanding of the water cycle.

Materials

- Yarn or pipe cleaner
- Colored Beads

Standards

Common Core

Language Arts:
CCSS.ELA-
Literacy.RI.3.3;
RI.3.7; SL.3.1;
W.3.2

NGSS

Earth's Systems: 2-
ESS2-3

Lesson Summary

This lesson is designed to give students a hands-on art activity that shows the different parts of the water cycle! The activity uses 10 beads that represent the water cycle, showing the paths water takes through its various states (solid, liquid, and vapor) as it moves throughout Earth's systems (oceans, atmosphere, ground water, rain, streams, etc.).

Suggested Sequence of Events:

1. Read the book [Water Dance](#) by Thomas Locker to introduce your students to the water cycle!
2. Read through the [IL AITC Water Ag Mag](#) to learn more about water. Interactive versions can be found on our website.
3. Complete the activity following the procedures:
 - Give each student a piece of yarn, leather, rope, or a pipe cleaner. To save time, put a pipe cleaner and one of each color bead in a snack size baggie to hand out.
 - Explain that each colored bead represents a different stage of water in the water cycle and share what each color represents.
 - Ask the students to string one of each colored bead on their bracelet. Tell them to string the beads in any order they like.
 - Have them put their bracelets around their wrists and secure them.
4. After the bracelets are complete, ask the students to show and explain their personal water cycle to you and/or a friend. For example, if their beads are in the following order: clouds, puddles, plants, etc., the students explain that the water started in the clouds, then it rained and fell into puddles on the sidewalk, then the water evaporated and collected on the plants overnight. Each student will have a different water story to tell.

TEACHER RESOURCES

Bead Colors and Representations:

- Sun (yellow) – the sun is the source of all energy on earth and powers the water cycle.
- Water Vapor (clear) – the part of the water cycle where water is suspended in the air or is steam and humidity.
- Clouds (gray) – when water vapor condenses but is still in the air.
- Rain (sparkling clear) – moisture from clouds falls to the earth as a liquid.
- Snow (white) – moisture falling as a liquid in the frozen state.
- Erosion (brown) – rain causes erosion where soil is unprotected by vegetation. Soil particles are suspended in the water runoff.
- Oceans (dark blue) – the Earth’s weather factory. Moisture evaporates from the oceans by the sun’s heat and is carried around the Earth by winds.
- Lakes (sparkling blue) – Collects water from streams, and also evaporates water into the atmosphere.
- Puddles (sparkling brown) – rainwater collects in low spots, streets, and sidewalks,. Puddles evaporate or go into storm sewers.
- Plants (green) – Plants take in water through roots and evaporate water into the atmosphere through leaves – a process called transpiration.

Extension Ideas:

- Have students partner up and explain their partner’s water cycle bracelet.
- Have students write a short summary describing the water cycle.
- Have students draw a comic strip following a drop of water through the water cycle. Introduce or strengthen the use of descriptive language.
- Talk more about all the places water can go.
- For upper grades, dig deeper with the three states of matter and introduce molecules.
- Learn more about water use around the world. How can we sustain clean water? How can we eliminate wasting water? What are the types of water pollution? Why is it important to keep our water clean? What does it take to clean our water?
- Invite someone from your local water treatment center in to talk with the class.
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!





PLANT MAZE

Grade Level

K-7

Length of Lesson

2-3 class periods

Objective

By the end of this lesson, students will have a better understanding of how light affects plant growth.

Materials Needed

- Cardboard shoeboxes
- Extra cardboard
- Tape or Glue
- Scissors
- Potting soil
- Small cups
- Pea seeds
- Copies of student worksheet
- [LED light emitting diodes](#) (optional)
- [Coin cell batteries](#) (optional)
- Black electrical tape (optional)

Standards**NGSS**

K-LS1-1; 1-LS1-1; 2-LS2-1; 2-LS4-1; 3-LS1-1; 3-LS3-2; 3-LS4-3; 3-LS4-4; 4-LS1-1; 5-LS1-1

Lesson Summary

This lesson is designed to give students a hands-on activity that shows how light affects plant growth through a process called *phototropism*, the orientation of a plant or other organism in response to light. Students will design a “plant maze” to see if plant growth changes based on the availability of light.

Suggested Sequence of Events:

1. **Set Up:** Have students bring in cardboard shoe boxes to create their plant mazes. Teachers will also need to acquire additional sheets of cardboard.
2. Read [Seed Soil Sun](#) by Cris Peterson to introduce students to the necessary elements for plants to grow.
3. Complete the activity following the procedures:
 - Ask students: How does light affect how plants grow?
 - After writing down their guesses, challenge students to build a “plant maze” to see how plants will grow without light.
 - Using the student worksheet, students should design their plant maze and share ideas with their classmates.
 - Then, students should place their shoeboxes upright on their desks and begin to construct their mazes.
 - Students must leave enough room in the bottom of the box to place a small container with seeds and soil. There must also be a hole at the top of the box to allow light into the maze.
 - Once the mazes are complete, students must plant their seeds. Give each student potting soil or a peat pellet and have them place the soil into a small cup, moisten the soil, and then bury some pea seeds. (Soaking the pea seeds in water for about 8 hours prior to planting will dramatically speed up the time to germination.)
 - Place the cup of seeds in the bottom of the plant maze and close the lid.
 - After one week, check the plant growth. Each day, have students document the changes in plant growth.
4. After plants have grown, return to students’ guesses and see if the results confirmed their initial ideas about light and plant growth.

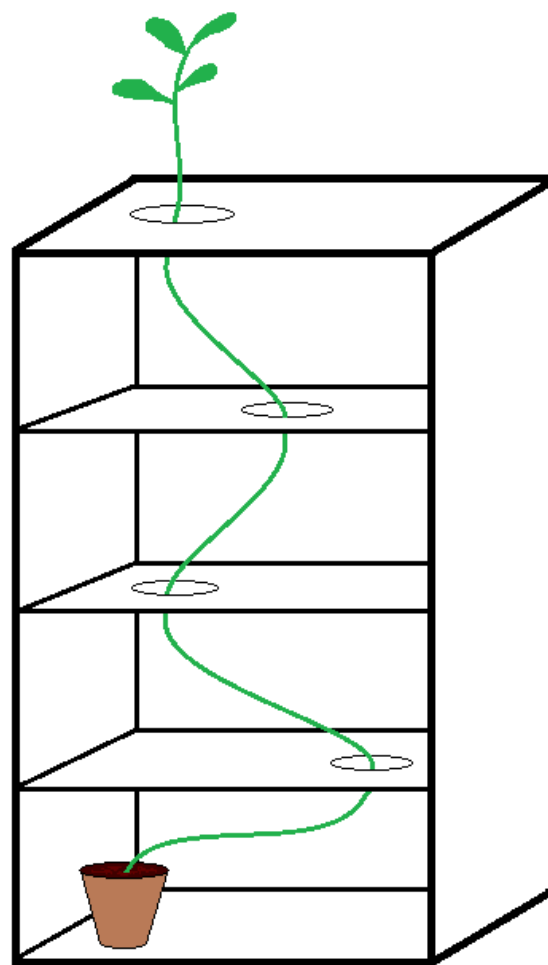
TEACHER RESOURCES

Suggestions and Options

- The lesson suggests waiting one week to open up the plant mazes. The pea seeds, under the right conditions, should germinate in just a couple days. It may be necessary to add water to the cups to give the seeds enough moisture to continue to grow for one week. Waiting a week allows for more of a “wow” factor when students open up their mazes, but is not necessary for the activity. Pre-soaking the seeds in water for approximately 8 hours ahead of planting will greatly speed up the time needed for the seeds to germinate.
- Students can also learn about the basics of electricity by taping coil cell batteries to LED light emitting diodes and inserting those into small holes in the box to serve as a light source. Placing these lights in different places and quantities in the mazes should change the results and allow for a more thorough experiment.

Extension Ideas:

- Introduce or teach about photosynthesis.
- Learn about how energy is moved throughout ecosystems, starting with the sun!
- Try different types of seeds in similar mazes to see how different plants react differently to light.
- **Scientific Inquiry:** Have students think more deeply about plant growth and create their own question, hypothesis, and experiment to test. What other variables can be tested to see how plant growth is affected? Students could try changing water, soil type, and temperature. Place some cups on their sides in the bottoms of the mazes. Do plants have to grow upright?
 - Have students use the “Student Inquiry Sheet” to test their variables.
- Watch a time lapse video of a plant growing.
- Read [AITC’s Urban Ag Mag](#) to learn more about how urban settings have inspired a variety of agricultural innovations to grow food in urban communities.
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!





PLANT MAZE

STUDENT WORKSHEET

Background Information

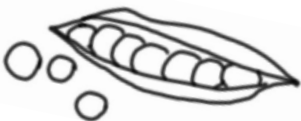
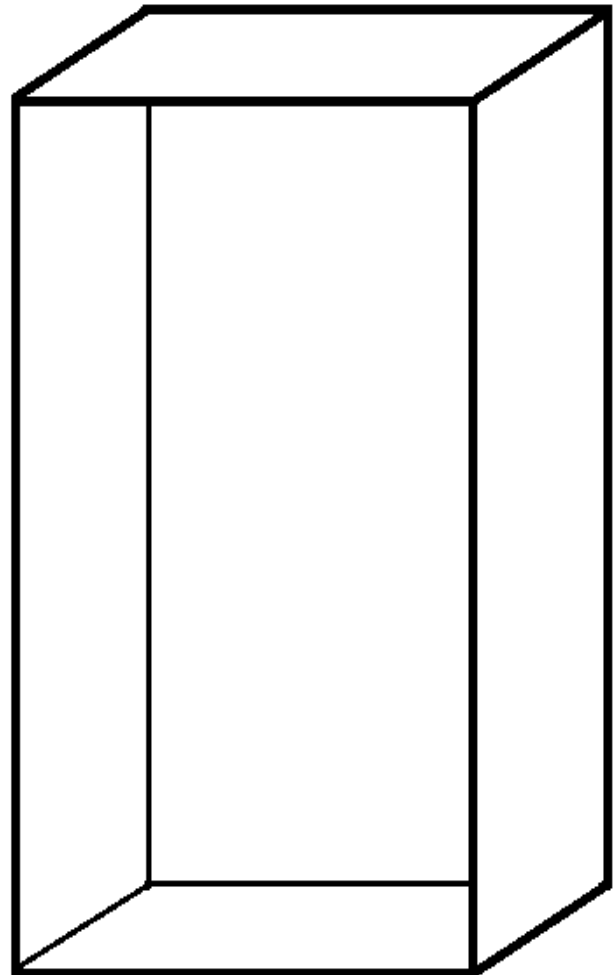
As you've already learned, plants need light to grow. But what affect does light have on plant growth? Can plants "find" the light they need? Today let's make a "plant maze" to test our hypothesis! You will use a cardboard shoe box, additional cardboard, and tape or glue to create a unique plant maze!

Make a Prediction!

How long will it take for your pea seeds to grow through the plant maze?

Directions

Draw your plans for your plant maze in the blank shoe box! Notes and ideas can be written in the blank space!





PLANT MAZE

STUDENT WORKSHEET

Chart Your Plant's Growth

After completing your plant maze and adding your cup of planted seeds in the bottom of the maze, wait until your teacher says it is time to open up the maze. How much have your plants grown? Are they growing towards the light?

Directions

Draw your plant maze as it actually looks after building, including your cup of seeds. Using a different color each day, draw your plant's growth below. Don't forget to fill in your key with the correct colors and numbers!

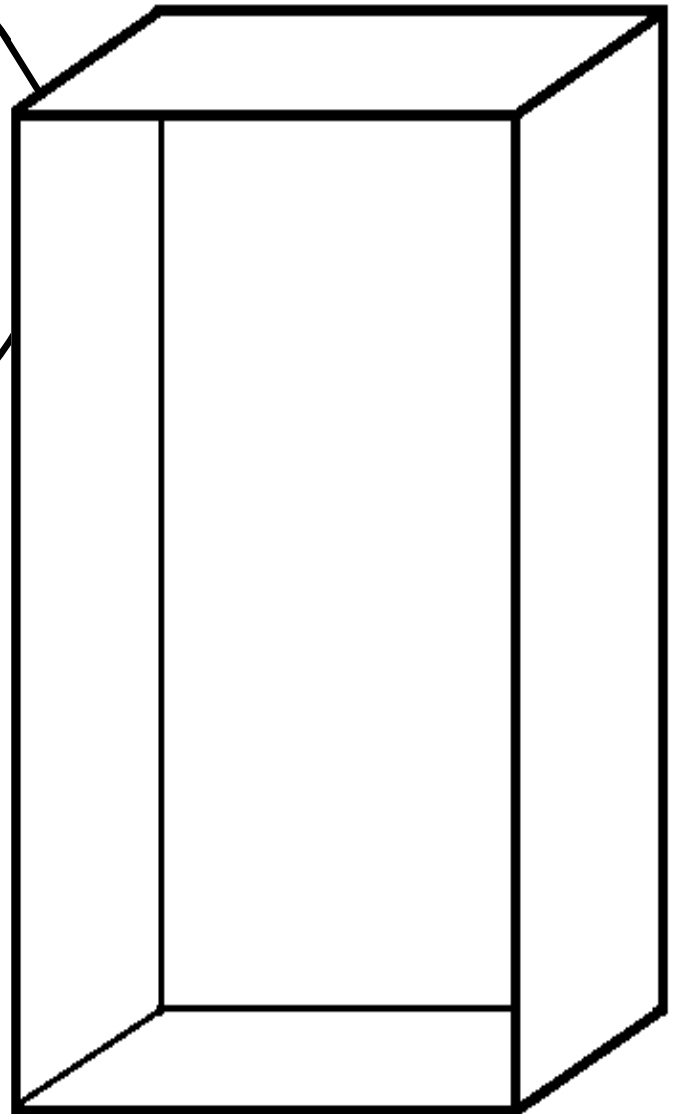
KEY

- 1st check, ____ days since planting
- 2nd check, ____ days since planting
- 3rd check, ____ days since planting
- 4th check, ____ days since planting
- 5th check, ____ days since planting

REFLECTION QUESTIONS

How did light affect the growth of your plant?

Was your prediction from the first page correct?
What are some other things that would affect the growth of the plant?





POWDER-POWERED POLLINATION

Grade Level

K-3

Length of Lesson

45 minutes

Objective

By the end of this lesson, students will have a better understanding of the process of pollination.

Materials Needed

- Juice boxes
- Boxed Macaroni & Cheese
- Paper Flower Cutouts
- Black Pipe Cleaners
- Paper Plates
- Hand Lens (optional)
- Copies of student worksheet

Standards

NGSS

K-LS1-1; 2-LS2-2

Lesson Summary

This lesson is designed to give students a hands-on activity that shows how pollinators like butterflies pollinate flowers.

Suggested Sequence of Events:

1. Set Up: Collect materials for each student/group.
2. Read *Flowers are Calling* by Rita Gray to help students better understand why pollinators are attracted to certain plants.
3. Read through AITC Pollinator Ag Mag to learn about the importance of pollinators. Interactive online versions can be found on our website.
4. Pre-Activity Discussion: What is pollination? Why is pollination important to humans? Who pollinates the food that we eat? How do pollinators actually do this important work?
5. Complete the activity following the procedures:
 - Give each student or group of students a paper plate, hand lens, pipe cleaner, juice box, and paper flower.
 - Students should tape or glue the paper flower to the top of the juice box and insert the straw into the juice box.
 - As they do this, the teacher should come around and pour some of the cheese powder from the boxed macaroni onto each plate. Students can share plates to reduce the quantity needed.
 - Next, students should bend their pipe cleaners onto the pointer finger of their non-dominant hand to form the legs of their pollinator (see picture on next page).
 - Using the student worksheet as their guide, students should complete the remainder of the activity steps.
 - Students will “visit” the first flower on the paper plate and rub their “legs” onto the cheese powder.
 - Then, they should visit the next flower on the juice box. Students should drink nectar with their proboscis (straw) and then gently bounce their “legs” on the flower to allow some of the pollen to fall off.
 - As they do each step, students should record their findings on the student worksheet.
6. Whole class discussion and reflection of activity.

TEACHER RESOURCES

Extension Ideas:

- Have students color/draw on the flowers to reflect what they would be drawn to if they were pollinators.
- Read *Flower Talk: How Plants Use Color to Communicate* by Sara Levine to learn more about what attracts pollinators to different plants.
- Have students create a comic strip showing the process of pollination.
- Have students learn about the body parts of a butterfly by creating a version of our Bag Butterfly lesson and attach their butterfly wings (ziplog bag and tissue paper pieces) to their finger using another pipe cleaner.
- Find videos online of different pollinators collecting nectar and pollen from flowers.
- Use the leftover macaroni to complete our Commas in a Series worksheet. Students can glue the macaroni to represent where the commas should go.
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!





POWDER-POWERED POLLINATION

STUDENT WORKSHEET

How do pollinators help plants grow?

Attach your new "legs" to your finger to turn into a butterfly! Take your butterfly to visit the flower on the table. Walk your butterfly legs through the pollen on the plate. What happens?

Draw what you see:

Tell a friend and then write what you see:

Next, land your butterfly on the other flower. Have your hungry butterfly use its proboscis (straw) to drink some nectar (juice). Gently tap your legs on the small flower. What happens?

Draw what you see:

Tell a friend and then write what you see:

What happened when your butterfly visited each flower? Why are these hungry butterflies and other pollinators important to our daily lives? Tell a friend and then write about how butterflies and other pollinators help plants grow.



EGG-CELLENT EMBRYOLOGY

Grade Level

3-6

Length of Lesson

5-10 minutes each day for
21 days

Objective

By the end of this lesson, students will have a better understanding of how chickens develop inside an egg.

Materials Needed

- Copies of chicken development pictures*
- [White, plastic eggs](#)
- Egg cartons

Standards

NGSS

3-LS1-1; 3-LS4-4; 4-LS1-1; MS-LS1-1; MS-LS4-3

*To print the embryo pictures so that the pictures line up with the facts, set your printer settings to print on both sides and to flip sheets on the short edge.

Lesson Summary

This lesson is a fun activity that allows students to see how the chick is developing inside of the egg, whether you are incubating eggs in your classroom or not! Students should have a basic understanding of the life cycle of a chicken (Egg—Embryo—Hatchling—Chick—Chicken).

Suggested Sequence of Events:

1. Set Up: Print the embryo development pictures on printer paper or cardstock, cut them all out, and then laminate for multiple uses! Then number the plastic eggs 1-21 and place the embryo development picture into its matching numbered egg. Lastly, place the eggs in the egg cartons. Make enough sets for students to work in small groups of two or more.
2. Read through the [IAITC Poultry Ag Mag](#) to learn more about chickens and other poultry facts! Interactive online versions can be found on our website.
3. Complete the activity following the procedures:
 - Define the word **embryology** as a class and talk about how this is an important part of all plant and animal life cycles!
 - Ask your students if they know how the embryo develops in its egg. Have your students brainstorm and share.
 - Read the background information on the Teacher Resources page to your class and then have students write a few questions they hope to have answered about chick development.
 - Talk about what chicken eggs require for a healthy chick to grow (temperature, rotation, tools used to help, etc.)
 - Each day, have students open the egg with the correct day on it, and observe what the embryo looks like. Then, have them flip over the laminated egg and read about what is developing on that day.
4. Whole class discussion and reflection of activity. Have students read the questions they wrote before beginning the activity and answer them either by writing complete sentences and/or sharing with the class. Here are some other discussion starters: How could you tell the differences between the stages? What happens to the yolk, vitelline membrane, and the albumen?

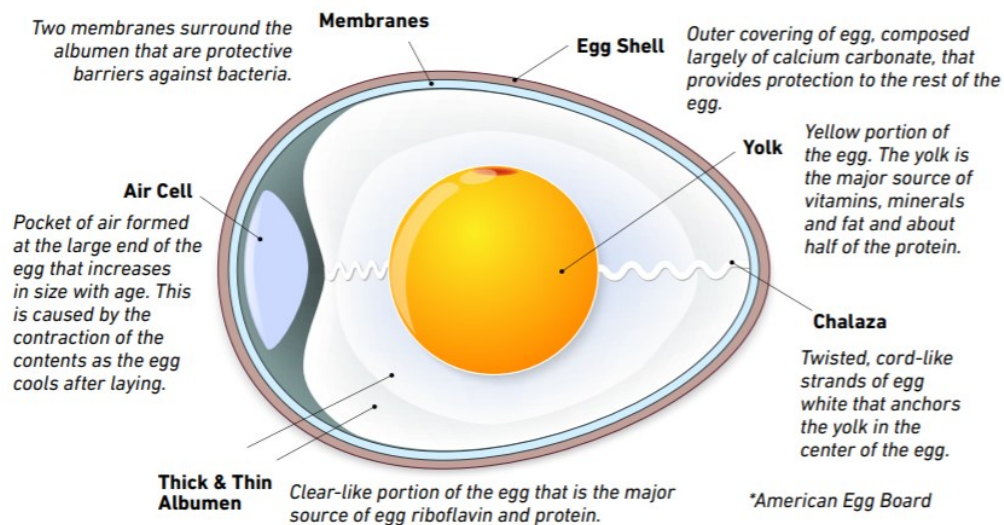
TEACHER RESOURCES

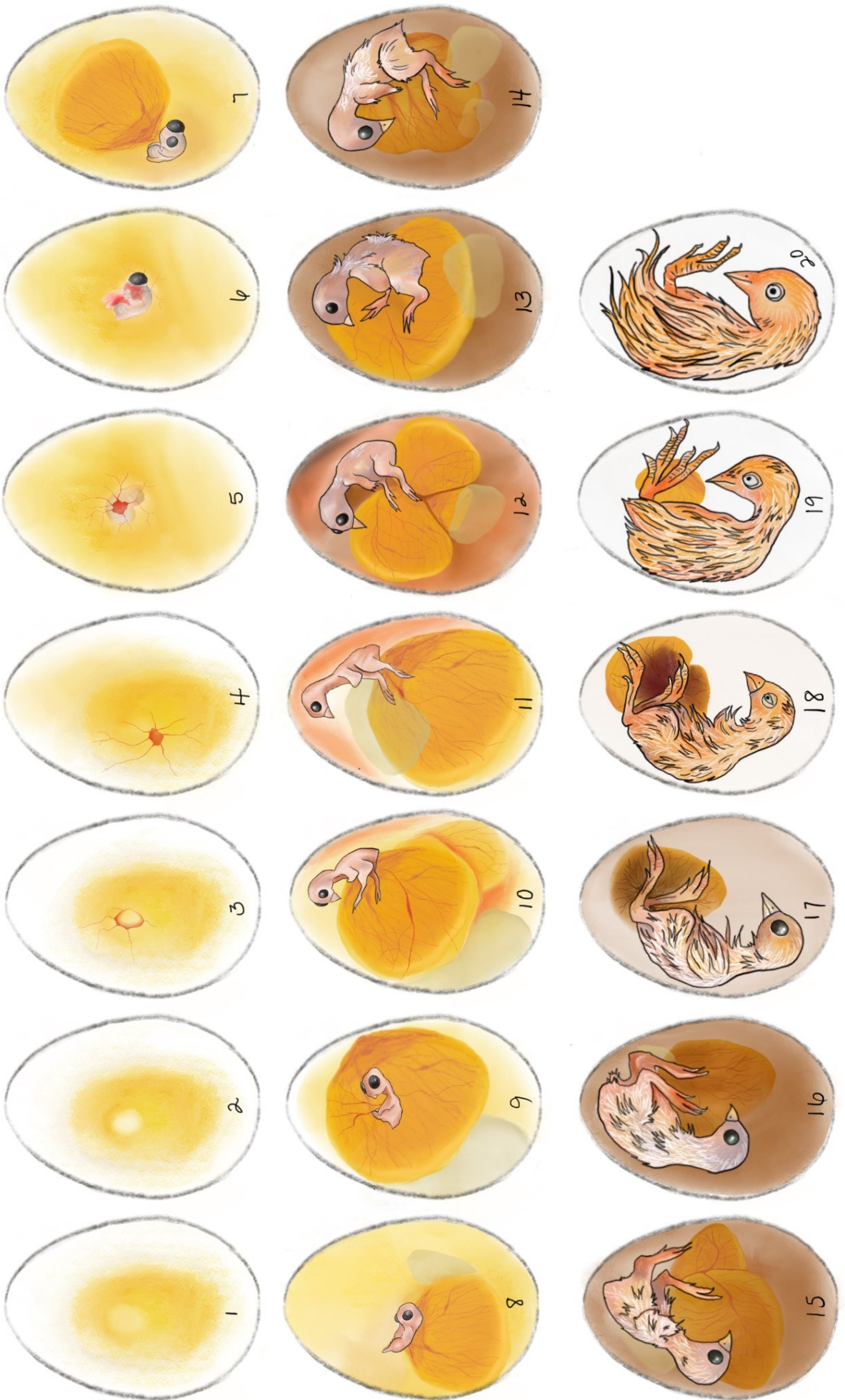
Background Information:

About 24 hours before a hen lays her egg, it must be fertilized by a rooster for it to become a chick. This process, called fertilization, forms a single cell that will begin to divide into 2, then 4, 8, 16, and so on! By the time the hen lays her fertilized egg, there will be hundreds of cells grouped together. These cells make a small, white spot, which can be easily seen on the surface of the yolk. The egg forms temporary organs that provide the embryo with nutrition, excretion, and respiration. These organs will continue to function until hatching time.

Extension Ideas:

- Have students make an “Embryo Egg-Venture” daily journal and record (write and/or draw) their observations each day.
- After the 21 days are over, talk about how the chicks crack open their shells from the inside!
 - What do chicks need to be healthy and safe once they hatch?
- If you’re not incubating eggs in the classroom, learn more about the importance of temperature and moisture control for embryo development.
- Watch [this](https://www.youtube.com/watch?v=DW3Tw5qpfZQ) video that shows the growth of the embryo each day. Video is available at <https://www.youtube.com/watch?v=DW3Tw5qpfZQ>
- Invite a chicken farmer or egg producer into your classroom.
- Watch a virtual field trip from the American Egg Board.
- Research what states produce the most eggs.
- Learn about different breeds of chickens!
- Have students share their favorite egg recipes and learn more about the nutrition of eggs and chicken.
- Have students strengthen their non-fiction literacy skills with our Ag-Venture with Poultry, 1-page activity sheet that pairs with our IAITC Poultry Ag Mag.
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!









Literacy



Art

PAPER BAG HORSE

Grade Level

K-4

Length of Lesson

45 minutes

Objective

By the end of this lesson, students will have a better understanding of a horse's traits and their role in agriculture.

Materials Needed

- Brown paper lunch sacks
- Scissors
- Glue
- Markers or Crayons
- Brown yarn
- Googly eyes (optional)

Standards

Common Core

CCSS.ELA-Literacy:
RI.K.4; SL.K.1a; SL.K.2;
SK.K.6; RI.2.1; RI.2.3;
W.2.1

Illinois Visual Arts

VA:Cr2.2.PK; Cr2.3.PK;
Cr2.1.1; Re7.2.1

NGSS

2-LS2-2

Lesson Summary

This lesson is designed to help students become familiar with different horse breeds, their traits, and how they have played an important role in the history of agriculture, all while making a fun horse puppet!

Suggested Sequence of Events:

1. Set Up: Print enough copies of the horse markings sheet so that each table of students has one to look at. To save time, cut the brown yarn ahead of time to be easily passed out to students.
2. Read through the [AITC Horse Ag Mag](#) to learn about horses! Interactive online versions can be found on our website.
3. Read [Horsepower](#) by Cris Peterson to capture student interest and introduce how horses have played a role in agriculture.
4. Complete the activity following the procedures:
 - Have students place the paper bag in front of them, with the open end of the bag facing away from them.
 - Draw a "U" shape with the top of the "U" starting halfway down the bag and the bottom of the "U" ending 3/4 of the way down the bag.
 - Carefully cut on the "U" shaped line.
 - Place the top, cut-off piece on top of the bottom piece and staple them together.
 - Cut strings of brown yarn for the forelock (hair on top of the head) and glue between ears.
 - Decorate with marker by adding googly eyes, color nostrils, and have students try to replicate one of the face markings from the sheet included!
5. Whole class discussion and reflection of activity.

TEACHER RESOURCES

Extension Ideas:

- Read "[Horses](#)" by Gail Gibbons to learn more about horses and their history.
- Show a labeled diagram of horse and have students label their own horse diagram.
- Have students go to [this](http://afs.okstate.edu/breeds/horses/) website and learn about a variety of horse breeds! Website can be found at <http://afs.okstate.edu/breeds/horses/>
- Invite a horse handler into the classroom.
- Take a closer look at horses on farms and ranches. What are some of the purposes of having a horse? How are they used for work, for hobby, or for sport? How are horses useful beyond the farm?
- Have students tell a fictional story about a horse.
- Learn about what it takes to care for a horse.
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!



Our Favorite Ag-Themed Books

Apples

The Year Money Grew on Trees
by Aaron Hawkins

Apple Orchard Riddle
by Margaret McNamara

Apples to Oregon
by Deborah Hopkinson

Pumpkins

Pumpkinheads
by Rainbow Rowell

Pumpkin Jack
by Will Hubbell

Squashed
by Joan Bauer

Corn

*Popcorn Country: The Story of
America's Favorite Snack*
by Cris Peterson

Corn is Maize: The Gift of the Indians
by Aiki

Corn
by Gail Gibbons

Water

Water is Water
by Miranda Paul

Clouette
by Tom Lichtenheld

Hey, Water!
by Antoinette Portis

Over and Under the Pond
by Kate Messner and Christopher
Silas Neal

Dairy

Clarabelle
by Cris Peterson

*Chuck's Ice Cream Wish:
Tales of the Dairy Godmother*
by Viola Butler

Milk Makers
by Gail Gibbons

Pollination

Monarch Butterfly
by Gail Gibbons

Butterflies Belong Here
by Deborah Hopkinson

*Honeybee: The Busy Life of
Apis Mellifera*
by Candace Fleming

The Secret Life of Bees
by Sue Monk Kidd

Wheat

The Thing About Luck
by Cynthia Kadohata

Farmer George Plants a Nation
by Peggy Thomas

Bread Lab!
by Kim Binczewski

Pork

*Pigs and Pork in the Story of
Agriculture*
by Susan Anderson and
JoAnne Buggiey

Welcome to Our Farm
by Jon Scieszka

Pig 05049
by Christien Meindertma

Soybeans

*Full of Beans: Henry Ford
Grows a Car*
by Peggy Thomas

*Auntie Yang's Great
Soybean Picnic*
by Ginnie Lo

*Pod to Plate: The Life Cycle
of Soybeans*
by Julie D. Blunier

Soil

*Up in the Garden and
Down in the Dirt*
by Kate Messner and
Christopher Silas Neal

*Erosion: How Hugh Bennett
Saved America's Soil and
Ended the Dust Bowl*
by Darcy Pattison and
Peter Willis

Jump into Science: Dirt
by Steve Tomecek and
Nancy Woodman

Beef

*Beef Cattle in the Story
of Agriculture*
by Susan Anderson and
JoAnne Buggey

Little Joe
by Sandra Neil Wallace

*Beef Princess of
Practical County*
by Michelle Houts

Social Emotional Learning

The Bad Seed
by Jory John

Spookly the Square Pumpkin
by Joe Troiano

Different Just Like Me
by Lori Mitchell

Our School Garden
by Rick Swann

History

The Great American Dust Bowl, by Don Brown
Lincoln Clears a Path: Abraham Lincoln's Agricultural Legacy
by Peggy Thomas

George Washington Carver for Kids, by Peggy Thomas

The Hundred-Year Barn, by Patricia MacLachlan

In the Garden with Dr. Carver, by Susan Grigsby

Thomas Jefferson Grows a Nation, by Peggy Thomas

Gardening/ Urban Gardening

Stepping Stones, by Lucy Knisley

Plant a Little Seed, by Bonnie Christensen

The Curious Garden, by Peter Brown

City Green, by DyAnne DiSalvo-Ryan

Farmer Will Allen and The Growing Table
by Jacqueline Briggs Martin

Seedfolks, by Paul Fleischman

Underrepresented Groups

Prairie Lotus
by Linda Sue Park

Measuring Up
by Lily LaMotte

The Girl Who Thought in Pictures
by Julia Finley Mosca

By Any Means Necessary
by Candace Montgomery

The Old Truck
by Jerome Pumphrey

Return to Sender
by Julia Alvarez

A Song for Lena
by Hilary Horder Hippely

Fry Bread
by Kevin Maillard

When the Shadbush Blooms
by Carla Messinger

Thirteen Moons on a Turtle's Back
by Joseph Bruchac

Ag Mags and Readers

Non-fiction Based Texts

Written at the 4th grade level, our Ag Mags are 4 -page, colorful agricultural magazines for kids! Each Ag Mag focuses on a different agricultural topic and includes brightly colored pictures, agricultural lessons and activities, and a "Career Corner" with interviews from people in Illinois who work in a field related to the Ag Mag topic. The information within is cross-curricular and helps students to deepen their understanding of agriculture.

Interactive versions can be found on our website!

Best of all, you can get a classroom set of 30 of any of our Ag Mags! They are FREE to any Illinois teacher!



Topics:

- Apples
- Beef
- Careers
- Corn
- Dairy
- Horse
- Horticulture
- IL History
- Livestock
- Nutrition
- Pizza
- Pollinator
- Pork
- Poultry
- Pumpkin
- Renewable Energy
- Seasons
- Soil
- Soybean
- Specialty Crops
- Tree
- Urban
- Water
- Wheat

Go to our website and click on "Contact Your Agricultural County Literacy Coordinator" to get your free pack!

Our Ag Readers are written at an upper elementary level and are easy to share with students online or can be easily printed in black and white or in color! Like the Ag Mags, our Ag Readers also have a variety of topics. Find the Ag Readers on our website!

Topics:

- Apples
- Beef
- Cooperatives
- Corn
- Cotton
- Dairy
- Horses
- Invasive Species
- Pizza
- Pollinator
- Pork
- Poultry
- Pumpkins
- Renewable Energy
- Sheep
- Soil
- Soy
- Specialty Animals
- Water
- Wheat

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