



*Planting the
Seeds of*

Knowledge

with



Illinois
AGRICULTURE
in the ClassroomSM

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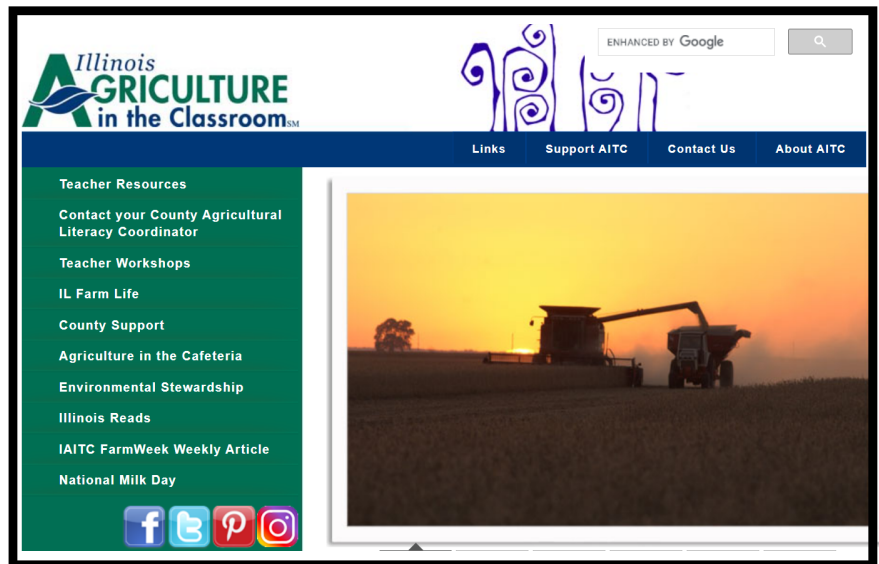


Online Resources

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





Math



Literacy

AG-VENTURE WITH BEEF

Use the IAITC Beef Ag Mag to help you work through this worksheet!

How has the beef industry improved over time? Read through the timeline, and while you're reading, really think about what events shifted the industry! Make sure to use evidence from the timeline to support your answer!

Livestock, including beef cattle, eat a lot of the crops that are grown in Illinois!

If one bushel of corn weighs 56 pounds, and livestock in Illinois eat 118 million bushels of corn each year, then how many pounds of corn do Illinois livestock eat each year?

If one bushel of soybean meal weighs 47.5 pounds, and Illinois livestock eat 31 million bushels of soybean meal per year, then how many pounds of soybean meal do livestock in Illinois eat?

Below is a list of definitions of beef-related vocabulary words! Figure out the word that belongs to the definition and then find it in the wordsearch!

A female cow that has given birth to a calf.

A female cow that has not produced a calf.

Animals, such as cattle, that have compartments in their stomach.

All products, except for beef, that come from beef cattle.

An even mixture of white pigmented hairs throughout the animal's body.

A male cow not used for breeding.

Animal skin treated for human use, such as leather from cattle.

The meat that comes from beef cattle.

Cattle less than one year old.

A male cow used for breeding.

Fermented corn, wheat, or hay with the stalks and leaves that is chopped and fed to cattle.

Another term for cattle.

s	t	s	p	s	o	s	e	t	s	z
a	t	k	i	f	s	f	d	n	t	t
q	g	c	j	l	n	e	i	a	e	x
c	o	w	u	j	a	k	h	n	e	r
m	m	v	k	d	e	g	q	i	r	e
e	e	e	k	n	o	n	e	m	j	f
f	h	e	i	f	e	r	m	u	p	h
g	l	v	n	i	p	b	p	r	w	r
q	o	a	g	s	e	e	m	y	x	d
b	o	x	c	e	l	l	u	b	b	i
r	f	u	f	k	x	w	g	e	n	n

TEACHER RESOURCES

ANSWER KEY

How has the beef industry improved over time? Read through the timeline, and while you're reading, really think about what events shifted the industry! Make sure to use evidence from the timeline to support your answer!

Answers will vary depending on the events students choose from the timeline. Overall, students should discuss how organizations/associations forming helped people organize the production/selling/marketing of beef cattle and meat. Technologies over time helped improve sanitation of meat and health of cattle and improved overall efficiency of transporting meat to communities and stores.

Livestock, including beef cattle, eat a lot of the crop that is grown in Illinois!

If 1 bushel of corn weighs 56 pounds, and livestock in Illinois eat 118 million bushels of corn each year, then how many pounds of corn do Illinois livestock eat each year?

$$118,000,000 \times 56 = 2,107,142.86$$

Livestock eat around 2,107,143 pounds of corn per year.

If 1 bushel of soybean meal weighs 47.5 pounds, and Illinois livestock eat 31 million bushels of soybean meal per year, then how many pounds of soybean meal do livestock in Illinois eat?

$$31,000,000 \times 47.5 = 652,632.579$$

Livestock eat around 652,633 pounds of soybean meal per year.

Below is a list of definitions of beef-related vocabulary words! Figure out the word that belongs to the definition and then find it in the wordsearch!

A female cow that has given birth to a calf.

Cow →

An animal, such as cattle, that has 4 compartments in it's stomach.

Ruminant ↑

An even mixture of white pigmented hairs throughout the animals body.

Roan ↗

Animal skin treated for human use, such as leather from cattle.

Hide ↑

A female cow that has not produced a calf.

Heifer →

All products, except for beef, that come from beef cattle.

By Products ↖

A male cow **not** used for breeding.

Steer ↓

The meat that comes from beef cattle.

Beef ↘

Cattle less than one year old.

Calf ↙

A male cow used for breeding.

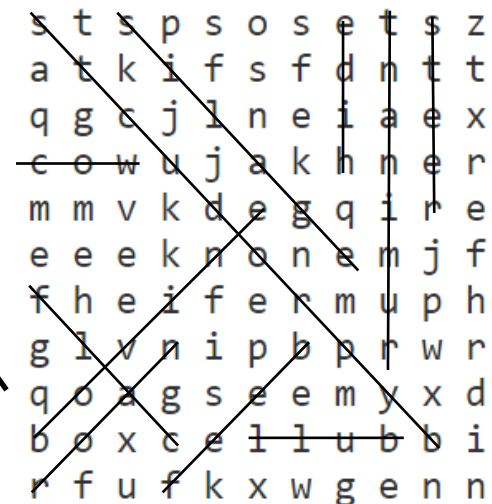
Bull ←

Fermented corn, wheat, or hay with the stalks and leaves that is chopped and fed to cattle.

Silage ↘

Another term for cattle.

Bovine ↗





CALENDAR CONNECTIONS

Grade Level

4-8

Length of Lesson

20 minutes

Objective

By the end of the lesson, students will be able to better analyze pictures and make thoughtful connections to them.

Materials Needed

- IAITC Calendar
- Copies of Calendar Connections student worksheet

Standards

Common Core

CCSS.ELA-Literacy.RI.4.7;
RI.5.7; RH.6-8.7; W.4.8

Lesson Summary

This is a fun lesson to help students strengthen their analysis skills. Students will use our IAITC calendars to analyze images of agriculture and make connections to both facts and personal experiences.

Suggested Sequence of Events:

1. Complete the activity following the procedures:
 - Pass out an IAITC calendar and the student worksheet to students.
 - Have students follow the directions on their Calendar Connections student worksheet, using the calendar as their secondary source for the information.
2. Whole class discussion and reflection of activity. Pair students together and have them share their facts and discuss their connections to both the fact and the image.
3. Extension Activities:
 - Have students do research on the topic of their calendar month and answer all the questions they created on the first page of their worksheet.
 - Have students do research on the topic of their calendar month and present to the class.
 - Have students create an ag-focused comic strip based on the topic of their calendar month.
 - Have students critically think about how the ag topic of their calendar month affects their daily lives.





CALENDAR CONNECTIONS

STUDENT WORKSHEET

What is your birthday month? _____

Open your AITC calendar to your birthday month and analyze the image. How does the image make you feel?

Now, look down at the calendar page, find your birthday, and read the fact. If your birthday falls on a Saturday or Sunday, read the Friday fact.

Did you know that fact already or is it new information?

Do you have any past experiences relating to the fact?

If so, explain.

If not, what does the image make you think of?

Come up with 2-3 questions that relate to that fact and write them in complete sentences.



CALENDAR CONNECTIONS

STUDENT WORKSHEET

Now that you've analyzed the fact, look back at the image. Do your feelings change about the image now that you've learned/remembered the fact? How so?

Pick another day and read the fact. How does this change the way you felt about the image?

Think of how that fact relates to you personally. What daily activities do you do that connect back to that fact?

Look back to the questions you created. Using your calendar, make inferences from the facts in that month and answer as many of your questions as you can.



Literacy



Art

PIG PLACEMAT

Grade Level

3-6

Length of Lesson

15-45 minutes

Objective

By the end of this lesson, students will be able to demonstrate their knowledge of pigs.

Materials Needed

- IAITC Pork Ag Mag
- 8.5" x 11" paper or larger
- Scratch paper
- Markers or crayons
- Scissors
- Glue or tape
- Paper scraps, various colors (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;

Illinois Visual Arts

VA:Cr1.2.K-6;
Cr2.2.PK; Cr2.3.PK;
Cr2.1.1; Re7.2.1

Lesson Summary

This lesson is designed to challenge students to take their knowledge of pigs — life, health, and uses — and creatively display that understanding on a kid's placemat!

Suggested Sequence of Events:

1. Read "[Awesome Agriculture: Pigs & Pork in the Story of Agriculture](#)" by Susan Anderson & JoAnne Bugey to snag student interest.
2. Read through the [IAITC Pork Ag Mag](#) to learn about pigs and pork. Interactive online versions can be found on our website.
3. Complete the activity following the procedures:
 - Take some time to discuss what placemats are used for. How do they look in restaurants? Brainstorm some creative ideas for designing a kid's placemat — crosswords, word searches, matching, true or false, pictures/diagrams, fonts, etc.
 - Pass out an IAITC Pork Ag Mag to each student and give them time to read through it.
 - Give your students requirements for what needs to be included on their placemat, using research from the Pork Ag Mag and other sources. Make it fun by including interactive information like games!
 - Give each student a blank piece of scratch paper and have them create a rough draft or write down the facts they want to share and how they want to share them.
 - Once students are finished with their rough drafts, give them the paper you are using for final drafts.
 - Have fun and be creative!
5. Whole class discussion and reflection of activity. Have students share one to two facts they added to their placemats!

TEACHER RESOURCES

Extension Ideas:

- Have students include the different cuts of meat a pig provides.
- Make copies of their placemats and have them switch with the person next to them to read the information and complete the games on each others' placemats!
- Laminate their final drafts so they can take them home and use them when they eat.
- Read "[Awesome Agriculture: Pigs an A-to-Z Book](#)" by Susan Anderson & JoAnne Buggiey. Look at the pictures and have students analyze the images.
- Introduce 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!



APPLE CHAIN

Grade Level

K-3

Length of Lesson

45 minutes

Objective

By the end of this lesson, students will have a better understanding of the life cycle of an apple tree.

Materials Needed

- 2 Red Paper Plates (per student)
- Colored Construction Paper
- Templates
- Stapler and Staples
- Tape
- Yarn
- Hole Punch

StandardsCommon Core

CCSS.ELA-Literacy.RL.4.3; W.4.2

CCSS.Math.Content.4.MD.2

NGSS

K-LS1-1; 3-ESS2-1;
3-LS1-1; 3-LS3-1

Lesson Summary

This lesson is designed to help students in sequencing and building models as well as help them understand the life cycle of an apple.

Suggested Sequence of Events:

1. Set Up: Print each template (available on our website) onto colored construction paper: seed (brown), tree (green), blossom (pink), bee (yellow), little apple (green). Cut out the shapes and then punch a hole on opposite sides of each template, except the seed which only needs one hole. Cut short strands of yarn-student will need five pieces each.
2. Read "[Apples to Oregon](#)" by Deborah Hopkinson to capture student interest.
3. Read through [AITC Apple Ag Mag](#) to learn about apples. Interactive online versions can be found on our website.
4. Complete the activity following the procedures:
 - Have students staple their two red plates together around 2/3 of the edge. Leave the other 1/3 open.
 - Have them tape one end of a piece of yarn to the inside of the stapled paper plates and extend the yarn out of the opening.
 - Add a stem to the red paper plates to make them look like an apple. Place this aside for now.
 - Ask students what shape is the start of a plant (seed). Then ask them what a seed grows into (tree). Use the yarn to tie these two shapes together. Repeat this until you get the chain completed.
 - Tuck the shapes into the red apple. Starting with the seed, slowly pull the shapes out of the apple and tell the story of how the apple grows.
5. Whole class discussion and reflection of activity. Pair students together and have them share their apple chain with their partner, telling the story of the apple life cycle!

TEACHER RESOURCES

Extension Ideas:

- Read “[From Seed to Apple](#)” by Anita Ganeri. Look at the pictures and have students analyze the images.
- Have students label each shape on their apple chain.
- Have students create a comic strip showing the apple life cycle.
- Have students tell a story from the apple’s perspective.
- Show a labeled diagram of an apple and/or apple tree.
- Introduce or teach about photosynthesis.
- Scientific Inquiry: Have students think more deeply about apple varieties. Do different types of apples taste different?
- Watch a time lapse video of an apple growing.
- Watch a video from a local farmer discussing apple growth and harvest.
- Take a field trip to an orchard and pick your own apples.
- Invite an apple farmer into the classroom.
- Have students research each step and write a paragraph explaining what happens at each phase. How long does each phase take?
- Measure and adjust the lengths of the yarn in between each shape to represent how long each phase takes.
- Take a closer look at bees and other pollinators. What is pollination? Why is it important for apples?
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!





Science



Literacy

BUTTERFLY LIFE CYCLE

Grade Level

1-5

Length of Lesson

45 minutes

Objective

By completing this activity, students will have a better understanding of the life cycle of a butterfly.

Materials

- Small paper plates
- Markers
- Scissors
- Glue
- Couscous pasta
- Rotini pasta
- Shell pasta
- Bowtie pasta
- Green construction paper (optional)

Standards

Common Core

CCSS.ELA-Literacy.RL.K.9;
RL.K.10; RI.K.9;
RI.K.10 ; RF.K.1;
RF.K.2; RF.K.3; W.K.3;
W.K.8; SL.K.5

NGSS

K-LS1-1; K-ESS3-1; K-ESS2-2

Lesson Summary

This lesson uses pasta to create a fun way for students to strengthen their sequencing skills while learning about the stages of a butterfly's life. This is the perfect lesson to also teach about the importance of pollinators!

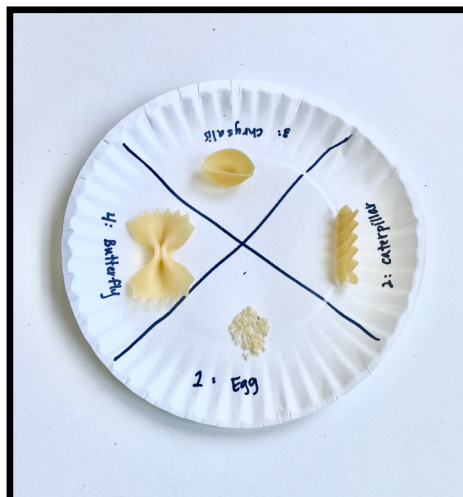
Suggested Sequence of Events:

1. Set Up: (Optional) Cut out leaf shapes from the green construction paper, four for each student. This will get glued down first and then the pasta glued on top.
2. Read: "[The Very Hungry Caterpillar](#)" by Eric Carle to capture student interest.
3. Read through the [AITC Pollination Ag Mag](#) to learn more about pollinators. Interactive versions can be found on our website.
4. Complete the activity following the procedures:
 - Give each student a small paper plate.
 - Using a marker, have them write out the names of the four stages on their paper plate. "Egg" at the top left, "Larva" at the top right, "Pupae" at the bottom right, and "Butterfly" at the bottom left.
 - For younger students, students with IEP's, or to reduce time of lesson, use the student worksheet (available on our website) instead of the paper plate. Put the glue dots right on the black dots and then add the correct pasta to each stage.
 - Draw arrows clockwise from "Egg" to "Larva," "Larva" to "Pupae" and so forth.
 - Put a dot of glue under "Egg" and drop a pinch of couscous on it.
 - Put a dot of glue under "Larva" and place a rotini pasta on it.
 - Put a dot of glue above "Pupae" and place a shell pasta on it.
 - Put a dot of glue above "Butterfly" and place a bow-tie pasta on it.
5. Whole class discussion and reflection of activity. Pair students together and have them use their pasta models to tell the butterfly life cycle to their partner!

TEACHER RESOURCES

Extension Ideas:

- Have students make a flip book of the life cycle of a butterfly and write about what happens at each stage and how long each stage takes.
- Read "[Egg to Butterfly](#)" by Shannon Zemlicka. Look at the pictures and have students compare the images with their pasta life cycles.
- Complete AITC "Bag Butterfly" activity to create butterflies out of a Ziploc Bag!
 - Place colored construction paper, cellophane, or confetti into the Ziploc® bag. Leave about an inch of the Ziploc® unfilled.
 - Seal the Ziploc® and fold the unfilled portion of the bag to the back of your butterfly.
 - Wrap a black pipe cleaner around the middle of your Ziploc® bag and twist it at the top. Shape the pipe cleaner to make it look like antennae.
- Have students create a comic strip showing the butterfly life cycle.
- Have students tell a story from a caterpillar's perspective.
- Show a labeled diagram of butterfly.
- The Monarch is the Illinois state butterfly. Watch this video on YouTube to learn more about these beautiful butterflies. [Monarch Butterfly | Amazing Animals](#)
- Read "[Monarch Butterfly](#)" by Gail Gibbons.
- Show a time-lapse of a caterpillar transforming into a butterfly.
- Learn about different species of butterflies. What butterflies are native to Illinois?
- Compare butterflies to moths.
- Take a closer look at butterflies and other pollinators. What is pollination? Why is it important for plants? Why is it important for agriculture?
 - Read "[Honeybee: The Busy Life of Apis Mellifera](#)" by Candace Fleming.
- Go to www.agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!





Science



Literacy

3-D PUMPKIN

Grade Level

3-5

Length of Lesson

45 minutes

Objective

By the end of this lesson, students will learn more about growing pumpkins in Illinois.

Materials Needed

- Orange construction paper
- Green construction paper
- Hole punch
- 2 paper fasteners for each pumpkin
- Scissors

Standards

Common Core

CCSS.ELA-Literacy:
RI.3.1; RI.3.9; W.3.2;
W.3.7

SS.EC.1.3; SS.IS.4.3-5

NGSS

K-LS1-1; 3-LS1-1; 3-
LS4-3

Lesson Summary

This lesson is designed to help students learn more about pumpkins while creating a visual display of a mini pumpkin.

Suggested Sequence of Events:

1. Set Up: Cut the orange paper lengthwise into 3/4 inch strips. Cut the green construction paper into 1 inch x 1 inch squares. Stack the orange strips and hole punch both ends of the stack and then punch a hole through the center of the green squares. Each student will get four orange strips and one green square.
2. Read [“Too Many Pumpkins”](#) by Linda White to capture student interest.
3. Read through [AITC Pumpkin Ag Mag](#) to learn about pumpkins. Interactive online versions can be found on our website.
4. Complete the activity following the procedures:
 - Identify four pumpkin facts from the Ag Mag and write a fact on each of their strips of orange paper.
 - Have students stack their orange strips, all facing the same direction.
 - Place a brad fastener through the center hole of the green square and then through one end of the stack of the orange strips. Make sure the words are facing outward. Spread the wings of the fastener to keep it in place.
 - Grab a second fastener and bend each end of the paper strips down, sliding the fastener through the punched hole at both ends. When all eight ends are attached, spread the fastener inside your pumpkin.
 - Last, have students spread out the paper strips to form a 3D pumpkin!
5. Whole class discussion and reflection of activity. Pair students together and have them share their pumpkin facts with their partner.

TEACHER RESOURCES

Extension Ideas:

- Read “[Pick a Pumpkin](#)” by Patricia Toht. Look at the pictures and have students analyze the images.
- Have students write three facts about pumpkins and one lie on their orange strips and have their classmates figure out which is the lie.
- Have students create a comic strip including pumpkin facts.
- Have students tell a story from the pumpkin’s perspective.
- Introduce or teach about photosynthesis.
- 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!





MILK EMULSION

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 (whole or 2%)
- Small bowls
- Cotton swabs
- Food coloring (4 colors)
- Dish-washing soap

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 fats and proteins are sensitive to the changes in the surrounding solution (the milk).

Suggested Sequence of Events:

1. 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.
2. Complete the activity following the procedures:
 - Pour enough milk in the bowl to completely cover the bottom. Allow the milk to settle. There should be no ripples in the milk before starting this activity.
 - Add one drop of each of the four colors of food coloring - red, yellow, blue, and green - to the milk. Keep the drops close together in the center of the plate of milk.
 - Find a clean cotton swab for the next part of the experiment. Predict what will happen when you touch the tip of the cotton swab to the center of the milk. It's important not to stir the mix. Just touch it with the tip of the cotton swab.
 - Now place a drop of liquid dish soap on the other end of the cotton swab. Place the soapy end of the cotton swab back in the middle of the milk and hold it there for 10 to 15 seconds.
 - Add another drop of soap to the tip of the cotton swab and try it again. Experiment with placing the cotton swab at different places in the milk.
4. Whole class discussion and reflection of activity. Here are some prompting questions:
 - Describe how the milk reacted when you first added the food coloring drops (step number 2).
 - Explain what happened when the soapy cotton swab was held on the surface of the milk.
 - What happened when you placed the soapy cotton swab in different locations of the plate? Would this work with the plain cotton swab, why or why not?
 - Read the background information on the teacher resources page.
 - What makes the food coloring in the milk move?
 - Explain why this activity would or would not work with regular tap water.

TEACHER RESOURCES

Background Information:

When you add soap to milk, the weak chemical bonds that hold the proteins in the solution are altered. It becomes a free-for-all! The molecules of protein and fat bend, roll, twist and contort in all directions. The food coloring molecules are bumped and shoved everywhere, providing an easy way to observe all the invisible activity.

At the same time, soap molecules combine to form a *micelle*, or cluster of soap molecules. These micelles distribute the fat in the milk. This rapidly mixing fat and soap causes swirling and churning where a micelle meets a fat droplet.

Milk is mostly water and has surface tension like water. The drops of food coloring floating on the surface tend to stay put. Liquid soap wrecks the surface tension by breaking the cohesive bonds between water molecules and allowing the colors to zing throughout the milk. What a party!

Extension Ideas:

- 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 closer look at emulsion. What are other types of emulsions?
 - Try out IAITC "The Chemistry of Butter" activity and make your own butter while deepening their understanding of emulsion.
- Take the experiment to the next level and have students test different types of milk-different fat contents and even different brands!
- 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!



Science



Literacy

WAD-O-WATERSHED

Grade Level

3-5

Length of Lesson

45 minutes

Objective

By the end of this lesson, students will understand the basic geography of a watershed, how water flows through the system, and how people can impact the quality of our water.

Materials Needed

- Large, Clear Plastic tub
- Waxed Paper (at least two feet per student)
- Spray bottle filled with colored water
- Copies of student Worksheet

Standards

Common Core

CCSS.ELA-

Literacy.SL.5.1; W.5.2;

W.5.7

NGSS

4-MS-ESS2-1; 5-ESS3-1;

5-MS-LS2-1; 3-5-ETS1-2;

5-PS2-1

Lesson Summary

This lesson is a hands-on activity that will help students identify what a watershed is and how water moves in it. Students will also learn how easily sediment and pollution move through watersheds and the importance of working together to conserve and protect the water in their own watershed. Have students work in small groups for a better experience.

Suggested Sequence of Events:

1. Set Up: Put your students into groups and hand out materials (each group gets one of each material). Then, have them block their tub so that one end is higher than the other. Hand out the “W-O-W Student Worksheet” to each student (available on our website).
2. Read “[Water is Water](#)” by Miranda Paul to capture student interest.
3. Define a Watershed and teach the included background information. Have students write the definition on their student worksheet.
4. Look at the Major [Watersheds in Illinois](#), which can be accessed at <http://iaitc.co/watersheds>.
5. Complete the activity following the procedures:
 - Have one student take the piece of wax paper and crumple it up into a ball.
 - Then, partially unfold the wax paper to form a 3D topography, complete with hills and valleys. This is your “wad-o-watershed.”
 - Place the wax paper in the tub.
 - Explain to students that we all live in a watershed. Have them hypothesize about the movement of water and what would cause that movement and write it on their student worksheet.
 - Have another student spray the colored water on the high points, or “divides,” of the watershed. Make sure they observe the flow of the water and fill out the next part of their student worksheet.
6. Have students work in their groups to finish their worksheets and then discuss the answers as a class.

TEACHER RESOURCES

Background Information

- A watershed is a geographic area in which water, sediments, and dissolved minerals all drain into a common body of water like a stream, creek, reservoir, or bay (the land that water flows across or under on its way to a stream, river, or lake).
- Large watersheds like the ones for the Mississippi River, Columbia River, and Chesapeake Bay are made up of many smaller watersheds across several states.
- A watershed includes all the plants, animals, and people who live in it, as well as the non-living components like rocks and soil. We are all part of a watershed, and everything we do can affect the surface and ground water that runs through this system.
- People influence what happens in watersheds, good or bad, by how the natural resources – the soil, water, air, plants, and animals – are treated. The quantity and quality of water draining from a watershed are dependent upon the climate, vegetation, soils, geology, and development of that watershed.
- Watersheds come in many different shapes and sizes. Landscape is made up of many interconnected basins or watersheds. Within each watershed, all water runs to the lowest point, such as a stream, river, or lake, due to the force of gravity. On its way, water travels over the surface and across farms, fields, forest lands, suburban lawns, and city streets, or it seeps into the soil and travels as groundwater.
- Activities that change the vegetation and surface characteristics of some watersheds will affect the quantity and quality of water contributed to a stream. What happens in small watersheds, such as pollution, also affects the larger watersheds downstream. Point source pollution is water pollution from an activity originating from an identifiable source. Nonpoint source pollution is water pollution from sources not easily identified.

Possible Answers for List on Student Worksheet

Agriculture	Household	Recreational	Industrial	Natural Events
<ul style="list-style-type: none"> • Crops • Animals • Golf Course • Horticulture Crop 	<ul style="list-style-type: none"> • Homes: Drinking, Bathing, Washing Dishes, Washing Cars • Lawns/Gardens • Waste Water Treatment Systems 	<ul style="list-style-type: none"> • Parks • Meadows • Woods • Camping Areas • Bike Paths • Swimming Areas • Boating Areas • Sporting Fields 	<ul style="list-style-type: none"> • Factories • Schools • Storage Units • Warehouses • Parking Lots • Gas Stations • Shopping Malls • Offices 	<ul style="list-style-type: none"> • Flooding • Drought • Mudslides • Fires • Storms/Severe Weather

TEACHER RESOURCES

Extension Ideas:

- Have students experiment with the amount of water they spray to see different ways the watershed functions.
- Let's see what happens when we have pollutants in our environment. Find some items to serve as your "pollutants." For instance, Orange Kool-Aid powder could be excess fertilizer on a golf course. Purple Kool-Aid could be a dump site. Mini chocolate chips could be dog poop at the local park. Place the "pollutants" on the watershed and then spray the water. What happens to the pollutants?
 - Connect this with the questions on the student worksheet.
- Have students find where they live on the watershed map of Illinois and share what they notice about it.
- Look at the [Watershed Map of North America](http://iaitc.co/NAwatershed), accessible at <http://iaitc.co/NAwatershed>. This is a government-created map of all the watersheds in North America. Each color represents a different watershed.
 - Consider these questions:
 - How many different watersheds do you see in North America? In the United States?
 - What do you notice about the size and shape of these watersheds?
 - Why is it important to have a better understanding of watersheds in our country?
- Read [A Drop Around the World](#) by Barbara Shaw McKinney to learn more about the journey that water takes as it cycles through the water cycle.
 - Have students draw a comic strip or write an essay from the perspective of the drop of water.
- Collect samples of water from around town and do a water quality test to each sample. Which samples are more polluted and why?
- Complete our "Drop in a Bucket" activity that shows how much fresh water is available on Earth for human use. Then discuss the importance of protecting and conserving water. What can they do to practice water conservation and protection? This lesson and more available at agintheclassroom.org.
- Talk about soil erosion and how that can also impact the watershed.
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!



Science



Math

SLICE OF SOIL

Grade Level

2-7

Length of Lesson

45 minutes

Objective

By the end of this lesson, students will have a better understanding of our natural resources and their connection to agriculture.

Materials Needed

- 1 Apple (keep sticker on, if possible)
- Paring Knife
- Cutting Board

Standards

Common Core

CCSS.ELA-Literacy.RI.4.7; RF.4.4; W.4.1; W.4.9

CCSS.Math.Content.4.NF.3

NGSS

3-LS4-1; 3-LS4-4;
3-LS2-1; 3-LS3-2;
4-PS3-4; ETS1.A

Lesson Summary

This lesson uses an apple as a small scale model of earth to give students a different perspective on the amount of land available for agriculture. Students will follow along the demonstration, using fractions to divide the earth into decreasing segments. Students should be familiar with the term *natural resource*.

*This activity should be completed as a teacher demonstration.

Suggested Sequence of Events:

1. Read "[A Handful of Dirt](#)" by Raymond Bial to capture student interest.
2. Read through [AITC Soil Ag Mag](#) to learn about soil. Interactive online versions can be found on our website.
3. Pre-Activity Discussion: Tell students that soil is one of our most important natural resources on earth's surface. Many living things, including people, depend on it for food. Not all soil is good enough for plants to grow. Let them know that this activity is going to show them how much soil we have on earth to grow our food.
4. Complete the activity following the procedures:
 - Explain to your students that the apple is going to represent a smaller model of the earth.
 - Cut an apple into four equal parts. Three parts represent the oceans of the world. The fourth part represents the land area.
 - Cut the land section in half lengthwise. Now you have two 1/8 pieces. One section represents land such as deserts, swamps, Antarctic, Arctic, and mountain regions. The other 1/8 section represents land where man can live and may or may not be able to grow food.
 - Slice this 1/8 section crosswise into four equal parts. Three of these 1/32 sections represent the areas of the world that are too rocky, too wet, too hot, or where soils are too poor to grow food. Plus, we can't grow food on some land because cities and other man-made structures are built on it.
 - Carefully peel the last 1/32 section. The peel on this small piece represents the amount of soil on which we have to grow food. This amount of soil will never get any bigger
6. Whole class discussion and reflection of activity. Ask your students to explain why soil is so important.

TEACHER RESOURCES

Extension Ideas:

- Give students a photo of an apple cut open. Have them label the layers of the earth. Have them explain what layer of the earth the soil is a part of.
- Have students draw or fill in a pie chart that shows the fractions from the activity. Color the sections to identify the types of areas described.
- Look at pictures of places around the world that have the types of land described in the demonstration.
- Introduce or review photosynthesis.
- Introduce or review sustainability.
- Invite a farmer into the classroom to talk about soil health.
- Have students research other types of natural resources. Students could present their research using a slide show or poster.
- Have students explain how weather and climate affect different regions in the world.
- STEM: Have students think more deeply into accessibility of natural resources. Can they design a way to be able to grow crops on the other parts of the land where there isn't good soil? Have students use the "STEM: Student Worksheet" to record their research and experiment.
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!

Media Resources:

Use this short video to introduce, review, or demonstrate this activity: <http://iaitc.co/Slice>



KING COTTON

Grade Level

3-5

Length of Lesson

45 minutes

Objective

By the end of this lesson, students will have a better understanding of the importance of cotton and the invention of the cotton gin.

Materials Needed

- [Cotton Bolls](#) (1 per student, classroom sets available at www.cottonman.com)
- Copies of student worksheets

Standards

Common Core

CCSS.ELA-Literacy.RI.4.3; RI.4.5; RF.4.3a

CCSS.Math.Content.3.0 A.A.1

NGSS

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

Lesson Summary

This lesson is designed to help students think about how cotton influenced the invention of the cotton gin and production of cotton.

Suggested Sequence of Events:

1. Read through the [AITC Cotton Reader](#) to learn about cotton.
2. Complete the activity following the procedures:
 - As a class, read through the background information on the student worksheet and discuss.
 - Give each student one cotton boll for ginning.
 - Have them examine the woody stem and the boll holding up the cotton fibers. What do they notice about the textures?
 - How would it feel to pick cotton with bare hands?
 - Would gloves have been available for protection?
 - Have students predict how many seeds are in their cotton boll.
 - Now, have your students begin to gin the cotton, removing the seeds from the fibers. Make sure to get all or as much cotton off the seeds as possible!
 - Once they have ginned their cotton boll, have them compare the number of seeds they found with their predicted amount.
 - Ask: Why do you think people used to have so few changes of clothes during this time period?
 - Have students reflect on their ginning work. How did they like it?
 - Have students complete the student worksheet to calculate how much cotton it takes to make clothes.
5. Whole class discussion and reflection of activity. Then, discuss the invention of the cotton gin.
 - How many years passed after the invention of the cotton gin until the beginning of the Civil War?
 - Did the tensions between the Northern and Southern states escalate after this important invention?

TEACHER RESOURCES

Extension Ideas:

- Listen to [songs](#), or spirituals, that enslaved people sang to pass the time while they worked.
 - What cultural differences may be expressed in music?
 - Do we still listen to music to pass the time while we work?
 - What does the kind of music we listen to say about our cultural heritage?
- Go to the '[Growing a Nation](#)' website at www.growinganation.org and discover more about cotton, the Civil War, and the Industrial Revolution.
- Read "[George Washington Carver: His Life and Discoveries with 21 Activities](#)" by Peggy Thomas. Discuss the Civil War era and make connections to agriculture and science.
- For a historical perspective of cotton, go to www.cotton.org for additional resources or order the [video](#) "[Cotton, the Perennial Patriot](#)" from National Agriculture in the Classroom at www.agclassroomstore.com.
- Discuss modern cotton farming! Share with the class an excellent online slide show: "[Cotton: From Field to Fabric in Forty Frames](#)" available at www.cotton.org.
 - This presentation describes the major steps involved in producing and processing cotton. It has great pictures and easy-to-read captions. As the teacher, you have control over the speed of the presentation which allows as much time as needed for commentary or questions.
- Have students examine the cotton fibers under a hands lens. They will notice that these fibers have almost a silky appearance.
 - Have student compare cotton fibers to other types of fibers. What plants/animals do we get other fibers from?
 - Compare and contrast wool with cotton, watch the silent file [From Wool to Cloth](#) at www.growinganation.org.
- Watch a time lapse video of a cotton plant growing.
- Watch a video from a farmer discussing cotton growth and harvest.
- STEM: Have students use recycled materials to design and build a cotton gin.
- STEM: Have students use recycled materials to build a cotton ball launcher.
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!





Social
Studies



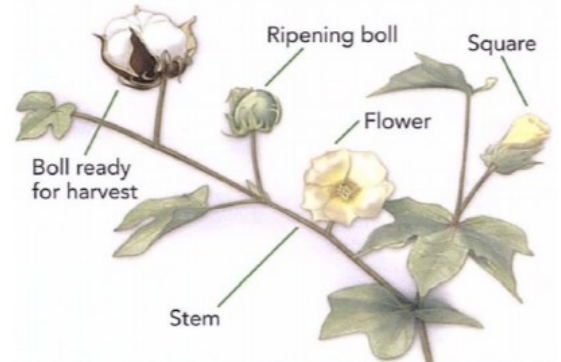
Science

KING COTTON

STUDENT WORKSHEET

Background Information

If you ask someone “What was the cause of the Civil War?” chances are they will answer “slavery.” True, but why did the South want enslaved people? Cotton. Generally, these enslaved people would hand pick cotton in the fields all day.



Ginning cotton means to remove the lint or fiber from the seed. It is important to remember that the more lint one removed from the seed, the more profit from each boll.

There are anywhere from 12- 42 plus seeds per boll. A person could gin one pound of cotton a day. Eli Whitney is generally credited with the invention of the cotton gin (1793). He basically wanted to “rake” the fiber from the seeds. His machine, operated by a hand-crank, revolutionized the production of cotton.

The cotton plant dries out at the end of the growing season when it’s ready to be harvested. The leafy part of the boll, called the bract, turns brown and becomes very sharp and prickly. The bracts also curl back on each other, which can make it difficult to separate the fiber from the bract when picking and can cut hands very quickly.

With the invention of the cotton gin, one person could gin 50 pounds of cotton a day. Did this mean plantation owners needed fewer enslaved people? No, this machine meant cotton was a more profitable crop. Now plantation owners felt they needed more enslaved people to produce even more cotton.

Today, the United States produces 43 million tons of cotton annually. The largest cotton producing states are Texas, Mississippi, and Georgia. Cotton is even an important crop in the West. Arizona and California are well-known for their Pima cotton, which is a finer, more expensive cotton fiber. Most of those fuzzy seeds are fed to dairy cattle or processed into cottonseed oil, which can be found in nearly every kind of snack food, including chocolate candy bars.

Ginning Process

1. Cotton bolls, made up of fiber and seeds, are fed into the cotton gin. The dark arrows show the path of the cotton through the gin.
2. As the handle is turned, the cylinder and brushes rotate.
3. Wire teeth catch the cotton fibers and pull them through narrow wire slots.
4. The seeds are too large to pass through the slots. They fall to the bottom of the gin.
5. Rotating brushes pull cleaned cotton fiber from the wire teeth and sweep it out of the gin.





BEANIE BABY

Grade Level

K-7

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

- Jewelry size resealable baggies (found in craft stores)
- Crystal Soil (order from Flinn Scientific at 800-452-1261)
- Hole Punch
- Water
- Measuring Spoons
- Soybeans
- Yarn
- Copies of student worksheet

StandardsCommon Core

CCSS.ELA-Literacy.RI.4.3; RI.4.4; RI.4.5; RF.4.3a

Social Studies

SS.EC.1.4; SS.EC.2.4; SS.EC.FL.1.4; SS.G.2.4; SS.G.3.4
NGSS

NGSS

5-PS1-4

Lesson Summary

This lesson is designed to give students a hands-on activity that shows how seeds germinate. Students will create a “beanie baby” which allows them to observe not only the process of seed germination, but also the environment a seed needs for growth.

Suggested Sequence of Events:

1. Set Up: Pre-cut yarn into pieces long enough to tie as a necklace. Hole punch baggies above the seal.
2. Read [“Full of Beans: Henry Ford Grows a Car”](#) by Peggy Thomas to capture student interest. Ask if they know what other things we use soybeans for/in.
3. Read through [AITC Soybean Ag Mag](#) to learn about soybeans. Interactive online versions can be found on our website.
4. Pre-Activity Discussion: Hand out the student worksheet and ask them what a seed needs to start growing. Have them work individually to fill out the “Think” column to answer that question. Then have students pair up and share their ideas. They can add new information in the “Share” column. Then, as a whole class, have students share their ideas from the “Think” column. Go through the list one at a time and discuss whether a seed actually needs that to begin growing. Cross off the ones that are not necessary. Once your class comes to a final consensus, have each student write the class list in the “Share” column.
5. Complete the activity following the procedures:
 - Give each student a hole-punched baggie.
 - Have each student put 1/4 teaspoon of Crystal Soil into their baggie.
 - Add 2-3 soybeans into the baggie with the Crystal Soil.
 - Then add 1-2 tablespoons of water into their baggie.
 - Have them seal their baggies firmly so that they won’t leak.
 - Then have them insert one end of yarn through the hole of the baggie and tie the ends of the yarn in a knot to make a necklace.
 - Tell them to wear the beanie baby around their neck, tucked under their shirts (warm, dark place). Have them check their beanie babies several times a day to observe germination and growth!
6. Whole class discussion and reflection of activity.

TEACHER RESOURCES

Extension Ideas:

- Read Dr. Seuss' "[Oh Say Can You Seed](#)" by Bonnie Worth and discuss the different parts of plants. Have students record unknown words as you read and go back to look up definitions.
- Have students create a comic strip showing the process of germination.
- Have students write a story from the soybeans perspective.
- Show a labeled diagram of a soybean plant.
- **STEM:** Have students build and label a model using recyclable materials.
- Introduce or teach about photosynthesis.
- **Scientific Inquiry:** Have students think more deeply about plant growth and create their own question, hypothesis, and experiment to test! Will soybeans grow faster in Mountain Dew, Coffee, or water? Does the amount of light affect the growth of the plant? Do different fertilizers, potting soils, temperature, etc. affect plant growth differently?
 - Have students use the "Student Inquiry Sheet" to test their variables.
- Watch a time lapse video of a soybean growing.
- Watch a video from a local farmer discussing soybean growth and harvest.
- Take a field trip to a farm.
- Invite a soybean farmer into the classroom.
- Watch the TEDx Talk "[Sitting on Soybeans: Building the Bio-Based Automobile](#)" presented by Debbie Mielewski. Discuss the idea of inventions and creativity. Discuss the broad possibilities of careers in Agriculture. Discuss how Debbie is a female in a stereotypically "male" career and how she is breaking that stigma.
- Research the "accidental" invention of the Crystal Soil used in the activity (which happened in Peoria, IL)
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!





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!





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?



A TRIP THROUGH ILLINOIS

Grade Level

4-8

Length of Lesson

15 minutes

Objective

By the end of this lesson, students will be able to identify multiple counties of Illinois.

Materials Needed

- Copies of “A Trip Through Illinois” student worksheet
- Copies of Illinois Counties map

Standards

Common Core

CCSS.ELA-Literacy.RI.5.7; RH.6-8.7; W.4.8

Social Studies

SS.G.1.4.

*Adapted from a lesson created by FCAE.

Lesson Summary

This lesson is designed to increase student interest about Illinois and learn the names of the counties within the state in a fun way! Students will use clues to try to figure out the name of the counties. Have students work individually or with a partner in this fun activity!

Suggested Sequence of Events:

1. Set Up: Make enough copies of the student worksheet and Illinois Counties map for each student.
2. Read through [AITC IL History Ag Mag](#) to learn about Illinois. Interactive online versions can be found on our website.
3. Complete the activity following the procedures:
 - Give each student a copy of the student worksheet and an Illinois Counties map. Have students work individually or with a partner.
6. Whole class discussion, share answers, and reflection of activity.
7. Extension Activities:
 - Read about the [Illinois State Symbols](#)
 - Put students into small groups and assign them an IL State Symbol to research and present to the class.
 - Read more about the IL State Soil-Drummer Silty Clay Loam. Why is this soil beneficial for agriculture in Illinois? Go to <https://www.soils4teachers.org/state-soils> for information about our state soil and soils around the country.
 - Look more into soils around the country and compare the type of commodities grown and raised in that state.
 - Read “[The Superlative A. Lincoln](#): Poems About Our 16th President” by Eileen R. Meyer.

Answers:

1. Bureau; 2. Lake; 3. Will, Henry, Scott, Warren (and more); 4. Jersey; 5. Greene, Brown, White; 6. Mason; 7. Cook; 8. Washington; 9. Sangamon; 10. Masaac, Iroquis; 11. Adams; 12. Jackson; 13. Union; 14. Jefferson; 15. Shelby, Carroll, Morgan (and more); 16. Clinton; 17. Scott; 18. (will vary); 19. Ford; 20. Bond; 21. Cumberland; 22. Pike



Social
Studies



Literacy

A TRIP THROUGH ILLINOIS

STUDENT WORKSHEET

The left column is a list of clues that describe Illinois County names! Use your Illinois County Map to help you figure out what county or counties are being described by the clue. When you think you've figured out the clue, write the county name on the line to the right of the clue.

1.	A piece of furniture	
2.	A fishing place	
3.	A boy's name	
4.	Breed of dairy cattle	
5.	Colorful county	
6.	Well know fruit jar	
7.	Person who prepares food	
8.	A state or variety of apple	
9.	Our state capital is here	
10.	Indian tribe	
11.	Two presidents with this last name	
12.	President on the \$20 bill	
13.	Railroad	
14.	First signer of the Declaration of Independence	
15.	A girl's name	
16.	42nd President of the U.S.	
17.	Brand of tissue	
18.	County you live in	
19.	Brand of car	
20.	Form of money or interest	
21.	Mountain range	
22.	A famous mountain	



Social
Studies



Literacy

A TRIP THROUGH ILLINOIS

ILLINOIS COUNTIES





Science



Literacy

HUNGRY PLANET GALLERY WALK

Grade Level

4-8

Length of Lesson

45 minutes

Objective

By the end of this lesson, students will have a better understanding of how climate, culture, and agriculture affect food choices around the world.

Materials Needed

- [*Hungry Planet: What The World Eats*](#) by Peter Menzel & Faith D'Aluisio

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

NGSS

3- LS3-2; 3-ESS2-2

ISSS

SS.IS.1-7.3-5; SS.IS.1-8.6 - 8; SS.CV.2-3.4; SS.CV.4.5; SS.CV.1-5.6-8; SS.G.3-4.5; SS.G.1-4.6-8; SS.EC.2.4; SS.EC.1-2.5; SS.EC.1-3.6 -8; SS.EC.FL.3.4; SS.EC.FL.1.6-8

Lesson Summary

This lesson will allow students to explore, compare, and contrast the nutritional habits of families all around the world.

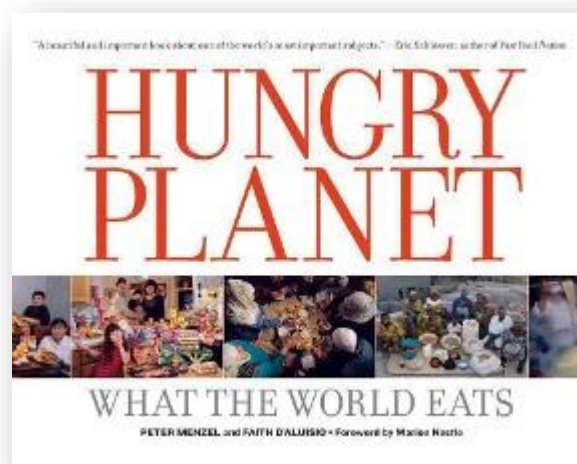
Suggested Sequence of Events:

1. Read through [IAITC Nutrition Ag Mag](#) to capture student interest.
2. Complete the activity following the procedures:
 - Display 5-10 main photos from different chapters of the book around the room. Try to select chapters that are diverse in region or culture. Number the photos, but do not label their country of origin.
 - Let the students perform a gallery walk, identifying one aspect of each photo of which they find familiar, and one aspect of each photo they find unfamiliar to their own lives or diets.
 - Use these observations to discuss the similarities and differences and have students try to guess where each photo was taken.
 - Have the students choose one photo on which to write a report. They should include agricultural aspects such as weather/climate, topography/landscape, soil types, etc. in their report.
 - Each student should use these findings in their discussion of why the people of their assigned country can grow specific foods and why they can't grow other types of food. Students should also discuss nutritional aspects. Does the food purchased fulfill all the nutritional needs of the people in that country?
 - After all students have completed their report, discuss how the United States differs from other countries. What kind of land and climate do we have? What types of food do we buy? How much money do American families spend on food?
 - Have students compare and contrast different families from the book. They could compare types of food eaten, how much money was spent on food for the week, obesity rates, birth/death rates, etc.

TEACHER RESOURCES

Extension Ideas:

- For a lengthier in-class discussion, consider asking students the following questions:
 - In one to two sentences, describe the weekly diet of the people in your picture.
 - How is this family's diet similar and/or different than your diet?
 - What are some possible reasons why their weekly diet looks different than yours?
 - How might climate play a role in the foods we eat?
 - How might agriculture practices play a role in the foods we eat?
 - What does the term "healthy diet" mean to you? What kinds of foods are part of a "healthy diet"? Which picture(s) shows a "healthy diet," in your opinion?
 - If you could, what questions would you ask this family about the food that they eat?
 - What questions do these pictures create for you regarding your own diet?
- Use this [infographic](#) from the United Nations, available at fao.org, to talk to students about reducing their food waste.
- 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>.
- Watch the "Kids Try 100 Years of School Lunches" [video](#), available on YouTube, to show students how the food we eat changes over time.
- 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.com to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!





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.



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

StandardsNGSS

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.
4. 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!

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

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

Cloudette
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

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