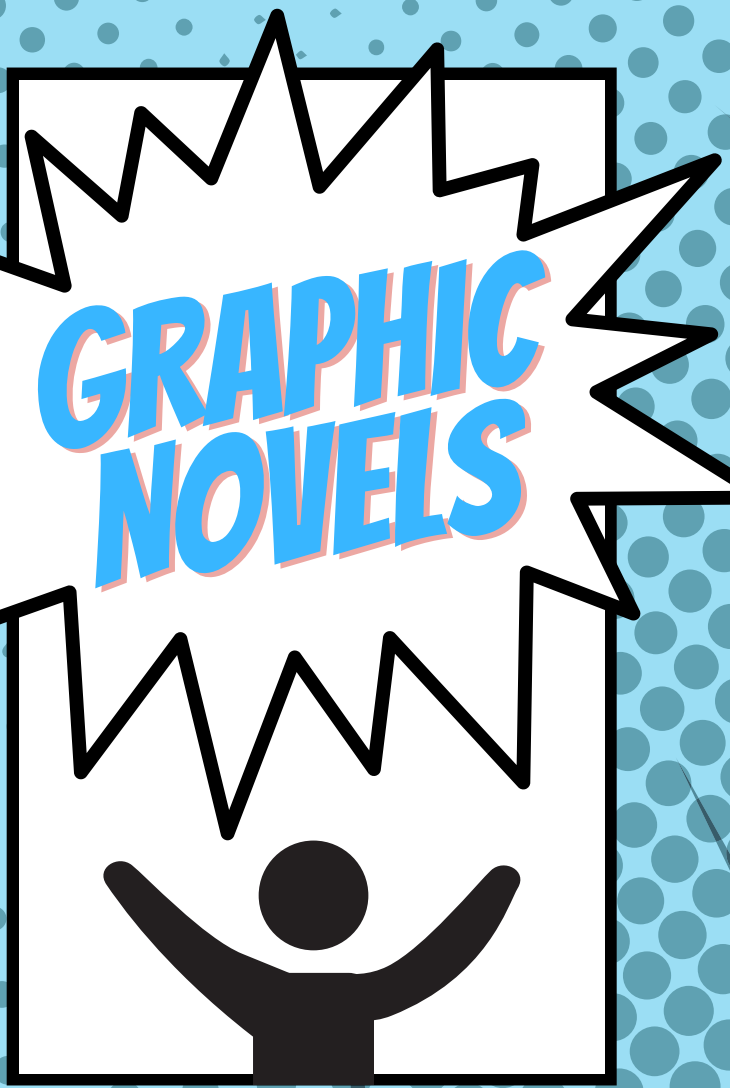
PLANTING THE SEED FOR LIFELONG READERS



Illinois AGRICULTURE in the Classroom℠

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.

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IAITC

Website: www.agintheclassroom.org

Blog: www.beyondthebarndoor.wordpress.com

Use the QR Code to find resources from today's presentation and more!

Ag-Themed Graphic Novels

- Fiction
  - *Pumpkinheads* written by Rainbow Rowell, illustrated by Faith Erin Hicks
  - *Stepping Stones* written and illustrated by Lucy Knisley
  - *Geeky Fab 5: Food Fight for Fiona* written by Liz and Lucy Lareau, illustrated by Ryan Jampole
  - *Measuring Up* written by Lily LaMotte, illustrated by Ann Xu
  - *Meal* written by Blue Delliquanti, illustrated by Soleil Ho
  - *Grand Theft Horse* written by G. Neri, illustrated by Corban Wilkin
- Manga
  - *Silver Spoon, Vol. 1* written and illustrated by Hiromu Arakawa
- Scientifically-Accurate Fiction
  - *Understanding Photosynthesis with Max Axiom, Super Scientist* written by Liam O'Donnell, illustrated by Charles Barnett III and Richard Dominguez
  - *Decoding Genes with Max Axiom, Super Scientist* written by Amber J. Keyser, PhD, illustrated by Tod G. Smith and Al Milgrom
  - *Robots and Drones: Past, Present, and Future* written by Mairghread Scott, illustrated by Jacob Chabot
- Historical Fiction
  - *The Great American Dust Bowl* written and illustrated by Don Brown
- Non-Fiction
  - *Louis Pasteur and Pasteurization* written by Jennifer Fandel, illustrated by Charles Barnett III et al.
  - *George Washington Carver: Ingenious Inventor* written by Nathan Olson, illustrated by Keith Tucker
  - *Levi Strauss and Blue Jeans* written by Nathan Olson, illustrated by Dave Hoover et al.

Graphic Novel Analysis

Literacy

Grade Level
4-6

Length of Lesson
45 minutes

Objective
By the end of this lesson, students will be able to identify graphic novel techniques used to tell stories.

Materials Needed
- Copies of the student worksheet
- Copies of panels from chosen graphic novel

Standards
Common Core
CCSS.ELA-Literacy.RL.4-5.1-3; RL.4.7; RL.5.4; RL.5.7; RL.6.4-6

Lesson Summary
This lesson is designed to help students increase their literacy skills by analyzing fiction and non-fiction stories using graphic novels.

A fantastic resource for teacher background information on graphic novels is *Understanding Comics: The Invisible Art* by Scott McCloud

Suggested Sequence of Events:
1. Find a graphic novel to read as a class. A suggested list of graphic novels with agricultural themes can be found on the teachers resources page.
2. Set Up: Select a series of panels (1-2 sequential pages) from the graphic novel and make enough copies for each student to have their own. Laminate for multiple uses.
3. Complete the activity following the procedures:
    - Give each student a copy of the student worksheet and have the page of panels.
    - Have them use the page on panels to complete the worksheet. Questions should be answered directly in the blank 'panel' where the question is located.
4. Whole class discussion and reflection of activity. Go over the answers as a class and have students share their answers and sketches.

TEACHER RESOURCES

Graphic Novel Suggestions:

- Fiction
    - *Pumpkinheads* written by Rainbow Rowell, illustrated by Faith Erin Hicks
    - *Stepping Stones* written and illustrated by Lucy Knisley
    - *Geeky Fab 5: Food Fight for Fiona* written by Liz and Lucy Lareau, illustrated by Ryan Jampole
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    - *Levi Strauss and Blue Jeans* written by Nathan Olson, illustrated by Dave Hoover et al.

Extension Ideas:

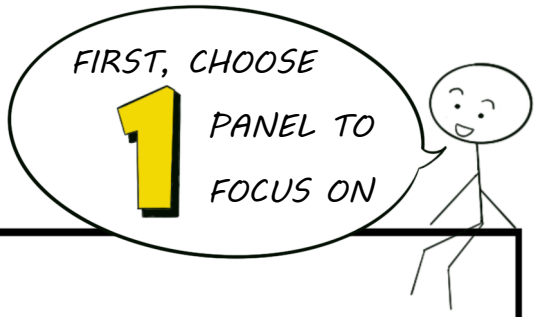
- Choose a graphic novel and find a series of panels to make copies of. Then cut them out individually and mix them up. See if your students can put them back in the correct order.
- Have students rewrite a panel from a different character's point of view.
- Choose either a panel or a series of panels for students to write out in traditional narrative prose.
- Give students a sentence or paragraph from a text being read in class and have them turn it into a comic strip.
    - Give each student a different sentence or paragraph from the same story and have them turn it into a comic strip. Then see if they can put them in order.
- Pair the graphic novel to any of our topics of Ag Mags.
    - Go to agintheclassroom.org to contact your County Literacy Coordinator for free

Literacy

Graphic Novel Analysis

Student Worksheet

Graphic novels and comic books use a variety of techniques to tell a story. Let's take a closer look!



Describe the setting

Characters

Who is in this panel?

Describe the facial expressions

Describe the body language

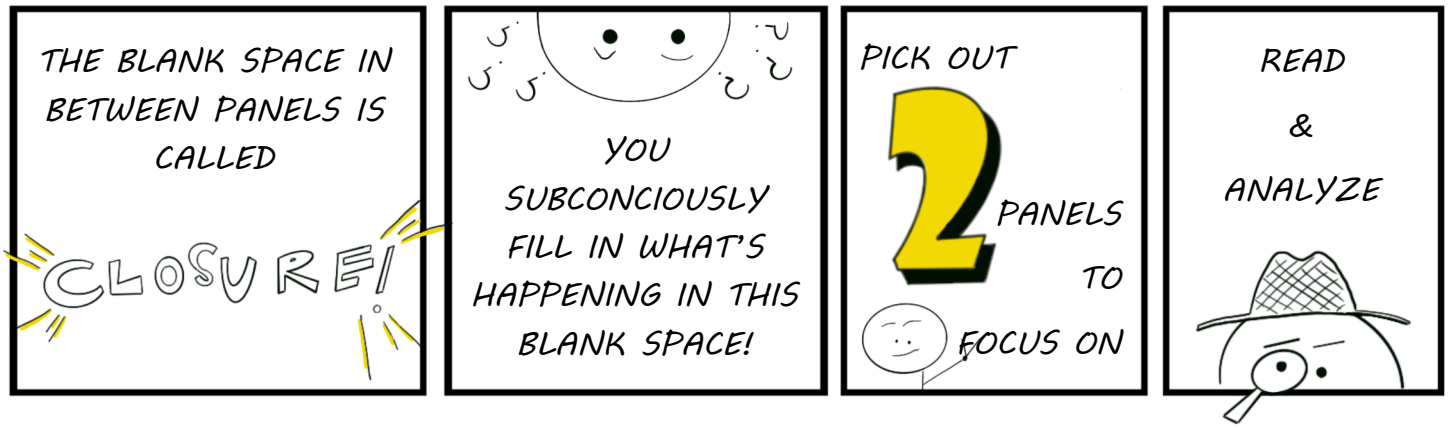
Now look at all the panels. What classic comic book action words are used?

Why did the author and artist choose to design the words like that?

Would it change the tone if had been written normally?

Graphic Novel Analysis

Student Worksheet



WHAT DO **YOU** THINK HAPPENED IN THE CLOSURE OF THE TWO PANELS YOU CHOSE?

EXPLAIN IT HERE!	SKETCH IT HERE!

WHAT HAPPENS AFTER THIS WHOLE SET OF PANELS? USE THE SPACE BELOW TO WRITE OR SKETCH WHAT **YOU** THINK MIGHT HAPPEN NEXT!

Pumpkin Catapult

STEM

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?

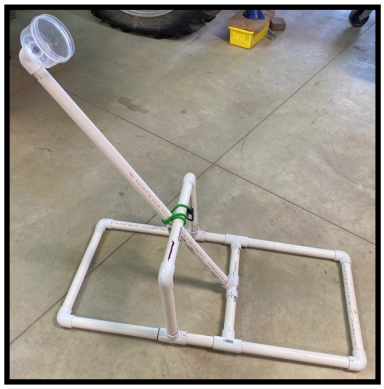
TEACHER RESOURCES

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!

Test 1

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

Test 2

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

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

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?

STEM

Pumpkin Catapult

Basic Instructions

Materials:

- Seven (7) 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?

Pumpkin Catapult

PVC Catapult Instructions

Materials:

- Fourteen (14) feet of 1" diameter PVC pipe
- Five (5) 1" diameter PVC "T" connectors
- Seven (7) 1" diameter PVC 90 degree connectors
- PVC primer and glue (often sold together)
- One (1) bungee cord
- One (1) 3" bolt and nut
- Small plastic container

Tools: Hacksaw or power saw, tape measure, drill and drill bit, permanent marker

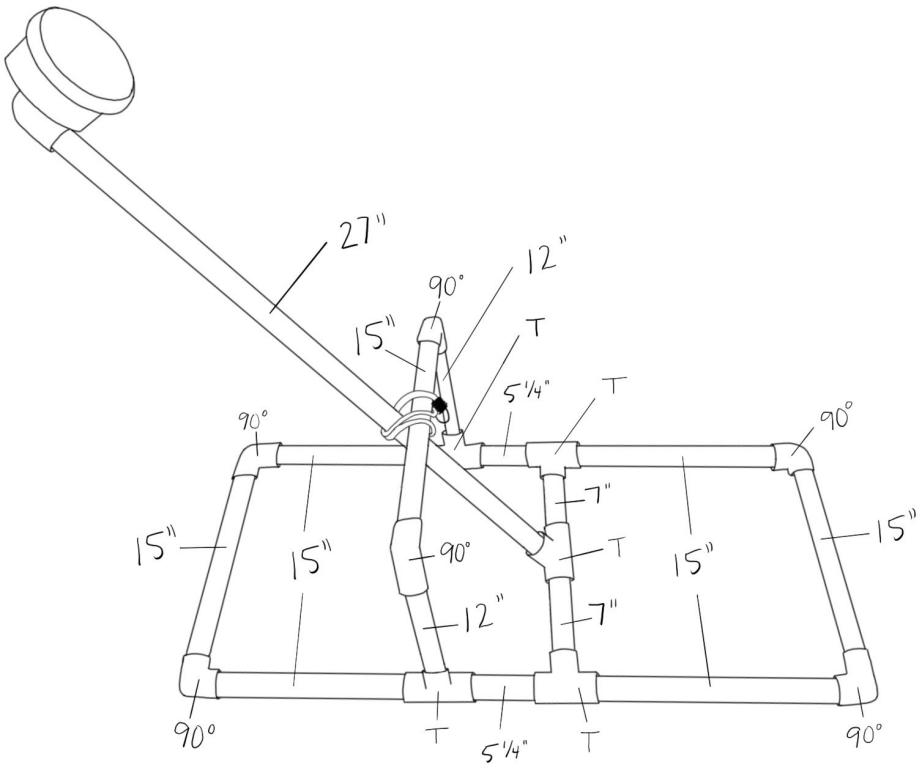
Follow these steps to build a PVC pumpkin catapult:

1. Begin by cutting your PVC pipes into the following lengths:
    - Seven (7) 15" long pieces
    - Two (2) 7" long pieces
    - Two (2) 5 1/4" long pieces
    - Two (2) 12" long pieces
    - One (1) 27" long piece (this can be shortened or lengthened to change the catapult's launching ability)
2. Follow the diagram on the following page to attach the pieces of your catapult. **Do NOT use the PVC glue at this time!**
3. Drill a hole through the 90 degree connector on the catapult's throwing arm large enough for your bolt to fit through.
4. Drill a hole through the bottom of your plastic container and then attach using the bolt and nut.
5. Before gluing, you may want to test out your catapult to see if you want a longer or shorter throwing arm. To test, wrap the bungee cord around the throwing arm and attach to the horizontal upright. The more you wrap it, the further your catapult should launch.
6. If you are happy with your throwing arm's ability, it's time to get ready to glue. Before disassembling your catapult, use a permanent marker to mark each pipe and connector union. Draw a straight line across each union. When you glue your pieces together, you will need to make sure you match these lines up again. This is a very important step, as you only get one chance to glue!

Pumpkin Catapult

PVC Catapult Instructions

7. Lay down cardboard to protect your surface from the PVC glue. It is recommended to do the gluing in a well-ventilated area. You should also wear rubber gloves to protect your skin.
8. Unscrew the bottles of PVC primer and glue. You should notice that the lids have brushes attached to them.
9. On each connector, rub the PVC primer brush on the interior where the pipe will be inserted.
10. Then, rub the PVC glue brush on the same spot.
11. Insert the correct PVC pipe, making sure to line up your permanent marker lines as you push the pipe in as far as it will go. Take your time with this step!
12. Continue for each piece until your catapult is reassembled.
13. Let dry thoroughly before using.
14. Students can experiment with this catapult as well. Try pumpkins of different weights and sizes and see if the distance changes. Set up a wagon and see if students can hit it. Try placing the catapult on different inclines to see if the trajectory changes.



Super Heroes of IL Ag

Social Studies | Literacy

Grade Level
4-8

Length of Lesson
90 minutes

Objective
By the end of this lesson, students will have a better understanding of significant participants of Illinois' agricultural history.

Materials Needed
- Copies of the super heroes cards
- Copies of blank comic pages
- Ultra fine-tipped black markers (optional)
- Colored pencils

Standards
Common Core
CCSS.ELA-Literacy.RI.4.1-2; RI.4.4; RI.4.7; L.4.5; W.4.9

Social Studies
SS.H.1.4; SS.H.2.3; SS.CV.1.3; SS.CV.4.3; SS.CV.1.6-8LC; SS.CV.2.6-8.MdC

Lesson Summary
This lesson is designed to introduce students to significant people who played a role in the shaping of the Illinois agriculture industry. Students will create a visual representation in the form of a comic strip that shows the sequence of the important events in their "super hero's" lives.

Suggested Sequence of Events:
1. Set Up: Print the super heroes cards and cut them in half. Laminate for multiple uses.
2. Read through the AITC Illinois History Ag Mag to learn more about the history of agriculture in Illinois.
3. Complete the activity following the procedures:
    - Explore the format of graphic novels and comic books and compare them to traditional prose.
        - Pay special attention to how graphic novels and comic strips use certain panels and words to portray the story, challenging the reader to fill in the gaps between the panels.
    - Give each student a blank comic strip sheet and one of the super hero cards.
        - Students can use 1-2 of any combination of the blank comic pages OR create their own panels on a blank sheet of computer paper.
    - Give students time to do a close read of their super hero. While they read, they should think about the more important points of their super hero's life that should be used in their comic strip.
    - Once students have decided what they want to include, have them draw, with pencil, the story on the blank comic strip page and then color it.
    - Optional: Have them use an ultra fine-tipped black marker to "ink" the lines of the comic before coloring to make it look more professional.
    - Have students share their super hero and display their work!
4. Whole class discussion and reflection of activity.

TEACHER RESOURCES

Extension Ideas:

- Here is a great resource to learn more about comic strips before teaching this lesson:
    - *Understanding Comics: The Invisible Art* by Scott McCloud
- Have students compare their super hero comic with another person who had the same super hero. What are the similarities and differences? Which aspects of their super hero did they each focus on and why?
- Create a large timeline and have students add important dates from their super hero's life to the timeline.
- Display their finished comics around the room and have student's view each other's work with a gallery walk. Have them ask 1 question about each comic strip as they complete the gallery walk.
- Have students conduct further research on their super hero and find more accomplishments.
- Have students complete the "Ag-Venture With Illinois History" worksheet as they read through the AITC Illinois History Ag Mag.
- Read through the following graphic novels to learn more about important people in the world of agriculture:
    - *George Washington Carver: Ingenious Inventor* by Nathan Olson
    - *Levi Strauss and Blue Jeans* by Nathan Olson
    - *Louis Pasteur and Pasteurization* by Jennifer Fandel
    - *The Great American Dust Bowl* by Don Brown
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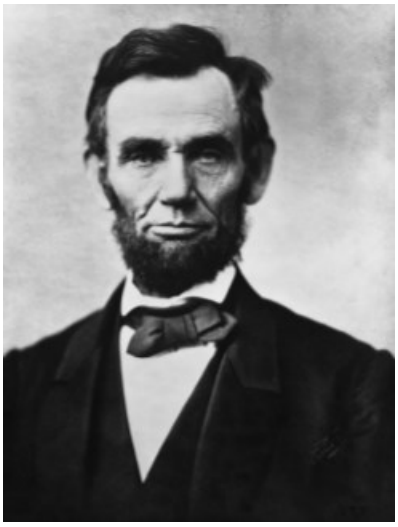
Abraham Lincoln



Abraham Lincoln, sixteenth president of the United States, is a much-studied figure in Illinois history. While his years spent in New Salem, his time serving in the Illinois legislature, his 1858 run for senator against Stephen Douglas, and his presidency are often mentioned, his impact on our nation's agriculture is rarely noted.

On May 15, 1862, President Lincoln signed into law an act of Congress establishing the United States Department of Agriculture (USDA). Lincoln's farm background on what was then the western frontier and his years as a country lawyer made Lincoln a representative of the frontier, the farmer, and small town democracy.

On July 2, also in 1862, President Lincoln signed into law what is generally referred to as the "Land Grant Act." This piece of legislation, introduced by U.S. Representative Justin Smith Morrill of Vermont, granted to each state 30,000 acres of public land for each senator and representative apportionment based on the 1860 census. Proceeds from the sale of these lands were to be invested in a perpetual endowment fund which would provide support for colleges of agriculture and mechanical arts in each of the states. The University of Illinois was established as a result of this legislation.

Although Lincoln's primary challenge during his Presidency was preserving the Union, the agricultural legislation that he signed transformed American farming.

May Berenbaum

May Roberta Berenbaum, born in 1953, is an American entomologist whose research focuses on the chemical interactions between herbivorous insects and their host-plants and how these interactions affect natural communities and the evolution of species. Berenbaum has produced hundreds of scientific publications and 35 book chapters.

A member of the National Academy of Sciences, Berenbaum has chaired two National Research Council committees, the Committee on the Future of Pesticides in U.S. Agriculture and the Committee on the Status of Pollinators in North America.

An academic who is devoted to teaching and fostering scientific literacy through formal and informal education, Berenbaum also has authored numerous magazine articles and six books about insects for the general public.

She also created the Insect Fear Film Festival, now in its 32nd year, on The University of Illinois campus. The festival engages and entertains hundreds of viewers each year.

Berenbaum was awarded the National Medal of Science, the nation's highest honor for achievement and leadership in advancing the fields of science and technology.

A. E. Staley

Augustus Eugene Staley was born in 1867 near Julian, California. He is generally regarded as the father of the soybean crushing industry. As a child, Staley had a chance encounter with an individual who brought Chinese soybeans to the U.S and shared them. Staley experienced success planting, weeding, and picking the soybeans.

Years later, Staley became concerned that the Midwest was being slowly "corned" to death by successive planting of corn. He recalled his successful childhood experience with soybeans and determined soybeans might be just the crop needed to rebuild the land through crop rotation. Staley conducted research at the University of Illinois and became convinced the soybean was a crop with great potential. Staley installed a soybean plant in Decatur, Illinois in 1922. Decatur began to call itself the "Soybean Capital of the World." While Staley's soybean business experienced a number of rises, falls, and changes after opening its doors, the company offered a full line of soybean products including defatted soy flour, grits, flakes, and soy protein concentrate by 1980. Staley was a true pioneer in the days when the soybean was little known.

Another of A.E. Staley's achievements was his role in the creation of the Chicago Bears and the creation of the National Football League. The Chicago Bears football team started as the Decatur Staleys in Decatur, Illinois. Staley said that big-time football needed big city crowds. They moved the team to Chicago and they started playing at Wrigley field and soon became the Chicago Bears.

Andrew J. Moyer

Andrew J. Moyer was an American microbiologist and researcher at the USDA Northern Regional Research Laboratory in Peoria, Illinois. His group was responsible for the development of techniques for the mass production of penicillin. By November of 1941, Moyer had succeeded in increasing the yield of penicillin by creating a better growth medium with the addition of corn steep liquor, an inexpensive byproduct of wet corn milling, and milk sugar. The team's development of deep vat techniques to grow the mold cultures, called deep fermentation, added the missing piece of the production puzzle.

Eight days after the bombing of Pearl Harbor, which happened on December 7,1941, lab representatives met with U.S. drug companies, which agreed to attempt large-scale production of penicillin using the new methods. The combined work of many researchers, including USDA scientists, resulted in making penicillin available in mass quantities by June 6, 1944, just in time to treat allied soldiers wounded on D-Day.

Cyrus McCormick

Cyrus McCormick was an American inventor and businessman who founded the McCormick Harvesting Machine Company, which later became part of the International Harvester Company in 1902.

In 1831, Cyrus McCormick took over his father's project of designing a mechanical reaper. McCormick implemented features of the machine that remain in use today: a divider, a reel, a straight reciprocating knife, a finger, a platform to catch the cut stalks, a main wheel and gearing, and a draft traction on the front. In 1834, in the face of competition from other inventors, McCormick took out a patent and, soon after, began manufacturing the reaper himself.

Before the reaper, the amount of grain that could be cut by hand during the short harvest season limited both food supply and farm sizes. McCormick's reaper would win international acclaim at the first world's fair in London's Crystal Palace, in 1851. It would also free farm laborers to work in factories in the expanding industrial revolution. In the late 1840s, McCormick moved to the young town of Chicago in America's western frontier and gambled that America's agricultural future was in the nation's prairie states: Illinois, Indiana, Iowa, Ohio, Wisconsin, and the territories that would become Nebraska, Kansas, and Minnesota. His venture would repay him with a fortune.

McCormick bought other agricultural patents and companies, expanding his empire to sell mowers, harvesters, and more. He established an extensive service organization, staffed with local agents who could befriend farmers, show them how to use the machines, and assess their creditworthiness. McCormick died in 1884, hard-driving to the end; his final words were, "Work, work, work." His company would combine with others to become the International Harvester Company two decades after his death.

Temple Grandin

Temple Grandin, born August 29, 1947, earned a doctoral degree in animal science from the University of Illinois at Urbana-Champaign. This accomplishment, along with others, came despite the fact Grandin has autism. Grandin was diagnosed with autism as a child. This condition was the source of speech delays, violent tantrums, and difficulties with social interactions.

Today, Dr. Temple Grandin is a brilliant scientist and professor of animal science at Colorado State University. Her world-changing career has revolutionized the livestock industry – each year, half the cattle in the United States are handled in cruelty-free facilities she has designed. She is also a passionate advocate for autism, using her experience to prove that people with the disorder can have great lives.

To achieve such unprecedented success, Temple used one of the strengths of autism: she thinks visually, the same way animals do. Because she thinks in pictures, she can see the world how a cow, a dog, or a pig might see it. She has used this insight to advocate for respectful treatment of animals raised for food.

Lydia Moss Bradley

“If you turned an estate worth half a million dollars into a fortune of over two million dollars you would be prosperous. If you were the director of the board of a national bank for twenty-five years you would be a leader. If you donated a city park and endowed a private college, and if you gave money and land to many community projects, you would be a great philanthropist. If you accomplished all of this as a woman, you would be astonishing, and, if you achieved all of this as a woman between the years of 1816 and 1908, you would be Lydia Moss Bradley.”

Born in Vevay, Indiana July 31, 1816, Lydia grew up on the family farm alongside the Ohio river. She learned all the typical chores expected of her as well as common sense and business skills which served her well throughout her life. Bradley was a pioneer in many fields who experienced success and tragedy. Lydia’s father had a strong distaste for slavery which made a strong impact on her. She chose to move to Illinois, a non-slave state.

Her accomplishments include being a leader in land development and agriculture, becoming the first female member of an American national bank board, establishing Bradley University in Peoria, Illinois, providing the estate on which St. Francis Medical Center stands, building the Bradley Home for Aged Women, and encouraging the city of Peoria to establish the first park system in Illinois on land she donated for the purpose.

Lydia Moss Bradley was inducted into the National Women’s Hall of Fame in 1998.

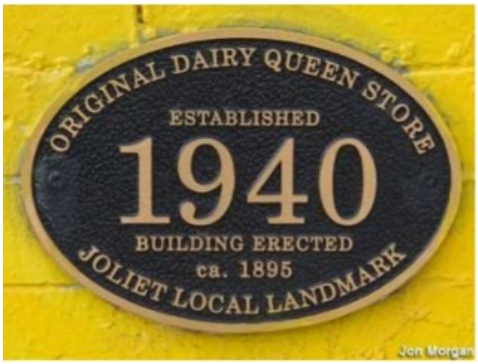
Jane Addams

Jane Addams was born on September 6, 1860, in Cedarville, Illinois. Jane Addams co-founded one of the first settlement houses in the United States, Hull House in Chicago, Illinois, in 1889. For these efforts, she was named a co-winner of the 1931 Nobel Peace Prize. Hull House in general served as a model home for the neighborhood, a household whose rooms and residents were clean and where nutritious meals were prepared and consumed. The Hull House provided services for the poor and ever-increasing number of immigrants that were immigrating to the United States.

The organization included child care, educational courses, public kitchens and other social programs. The Hull-House residents were especially concerned about the poor diets of their neighbors. They wanted to extend their own healthier eating habits to their neighbors through the cooking classes and establishment of a "diet kitchen" in a small house near the settlement. Started in the fall of 1891, the kitchen provided a place where the settlement could offer cooking classes and prepare meals for the sick.

Jane Addams died in 1935, in Chicago, and is remembered as a pioneer in the field of social work, an advocate for health care and proper nutrition, and as a pacifist.

Sherb Noble



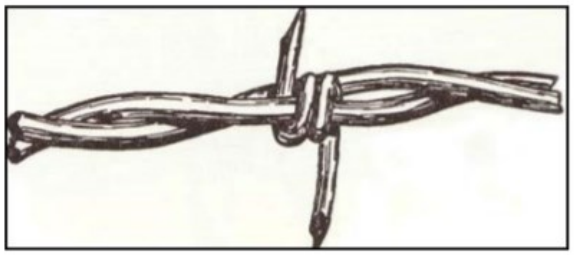
"Sherb's" was the name of a small ice cream store that opened in Kankakee, Illinois, August 4, 1938. A sign appeared in the window that said, "All you can eat for 10 cents!" This was a bargain during the Great Depression.

The owner of the store, thirty-year-old Sherwood Dick "Sherb" Noble, had been associated with dairy products from his teenage-years. What he offered his customers that day for 10 cents was a new semi-frozen, "soft-serve" ice cream. This new type of ice cream had been formulated by Sherb's new business partner J.F. McCullough.

The enthusiastic acceptance of the new soft-serve ice cream made history by launching a multi-million dollar business. Sherb soon opened the first store, named "Dairy Queen," in Joliet, Illinois. McCullough named the store "Dairy Queen" because he believed his soft serve was a "queen among dairy products, the epitome of freshness and wholesomeness." In time, Dairy Queen became internationally known and more than 5,000 Dairy Queen stores would open in the United States, Canada, and 14 other countries.

The substance used to adhere the paper wrappers onto the cones is not glue, but is simply corn syrup, which is completely safe if ingested.

Joseph Glidden



Illinois farmer Joseph F. Glidden is credited with the development of barbed wire. Before his invention in the 1870s, settlers on the treeless plains of the West had no easy way to fence livestock away from cropland. Ranchers had no method to prevent their herds from roaming far and wide. Glidden's barbed wire opened the plains to large scale farming and closed the open range, which brought the era of the cowboy and the round-up to an end.

Not everyone was happy with this new product. When livestock encountered barbed wire, it was usually a painful experience. The injuries provided enough reason for the public to protest its use. In fact, some religious groups demanded its removal and nicknamed the barbed wire, "The Devil's Rope."

The advent of Glidden's successful invention set off a frenzy that eventually produced over 570 barbed wire patents. It also set the stage for a three-year battle over the rights to these patents. When the legal battles were over, Joseph Glidden was declared the winner and the "Father of Barbed Wire." He established the Barb Fence Company in Dekalb, Illinois and became one of the wealthiest men in the nation.

Andrea Braundmeier-Fleming & Annie Newell Fugate

Annie Newell-Fugate Andrea Braundmeier-Fleming

Andrea, who was born, studied and still lives in Illinois is partnering and researching with Annie, also an Illinois student, to study the use of antibiotics in pigs. Their research was completed jointly at Southern Illinois University School of Medicine and Texas A&M University.

The treatment of pigs with antibiotics during their growth phase of life is done primarily to keep animals healthy and to maximize growth potential. Sick animals cannot build muscle and do not store fat well. However, the over use of antibiotics in humans and treatment of agricultural species used for meat consumption has caused great concern and debate. This has left farmers looking for solutions to keeping the herd healthy while still maximizing growth and keeping prices at a reasonable market level.

Together Dr. Fleming and Dr. Fugate researched swine health by substituting a portion of the fat source in the diet to a "healthy" fat. They tested a plant derived fat as a feed additive to improved piglet immune function and growth. Improved immune systems would lessen the need for antibiotics and the increased incidence of antibiotic resistant bacteria. This study explored the idea that if plant fats added to a pig's diet would alter the metabolism of the animal and produce a healthier pork product for consumers.

These two proud Illinois legacies published this research in 2020 and have been researchers for many other published and ongoing studies.

Jacob Holoch

Jacob is a 2018 graduate of LeRoy High School located in McLean County, Illinois, and a 2021 graduate of Illinois State University. He is now a Crop Insurance Claims Adjuster at County Financial along with being the owner of his own business in aerial photography.

Jacob developed a passion for aerial photography through a combined interest in technology and drones. His passion led to the establishment of Central Illinois Aerial Services, a business he owns and operates. The business provides aerial photography and related services. Farmers are one of Jacob's clients as aerial photography allows farmers to monitor crop health, increases profitability by way of higher yielding crops, and gives farmers high resolution images. Aerial imagery is a valuable tool used in agriculture, but also benefits businesses, law enforcement, among others.

Jacob possesses a remote pilot's license. This licensure allows him to operate a drone to take aerial pictures of what clients request. He markets himself using social media platforms, a company website, and business card circulation. He taught himself how to operate his drone along with varied software, which help show his clients his expertise.

Jacob notes that singlehandedly operating his own business, Central Illinois Aerial Services, requires a lot of work and came with a huge learning curve. Technology changes quickly and Jacob makes staying current on changes in drone and camera technology a priority to ensure his business runs efficiently.

Wheat Milling

Science Literacy

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.CC.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!