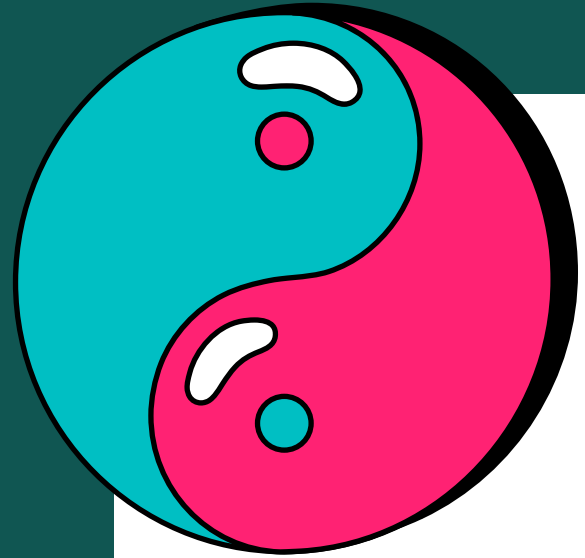


DON'T PLAY IN THE CORNFIELD!

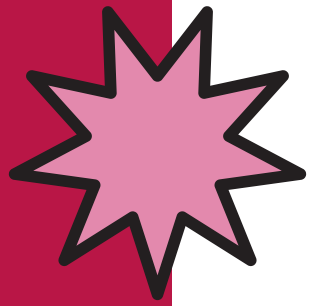
Play (and Learn!) in the Classroom

Stephanie Hospelhorn and Lee Deal





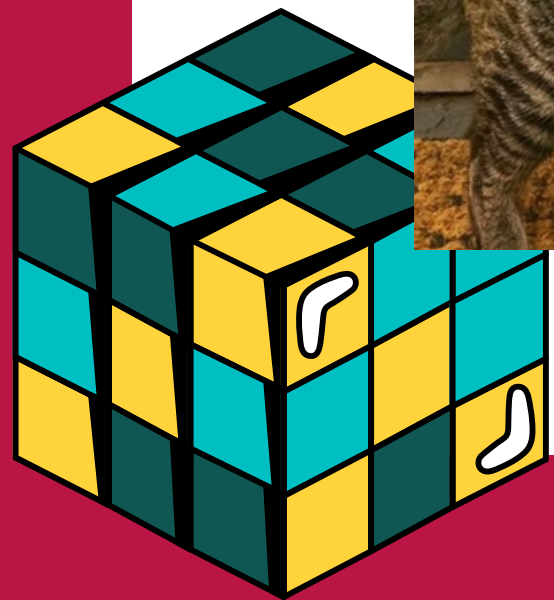
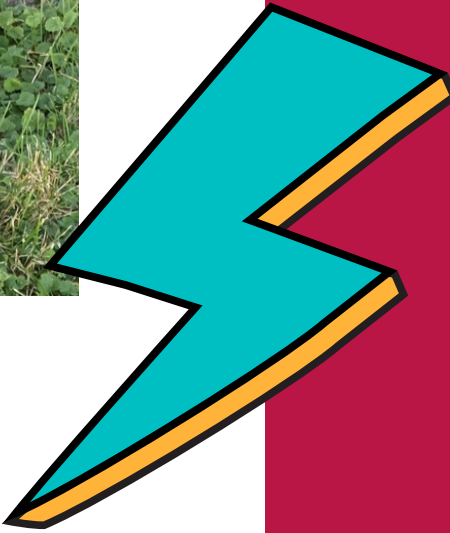
THE PLAYERS



Stephanie



Lee



ILLINOIS AITC

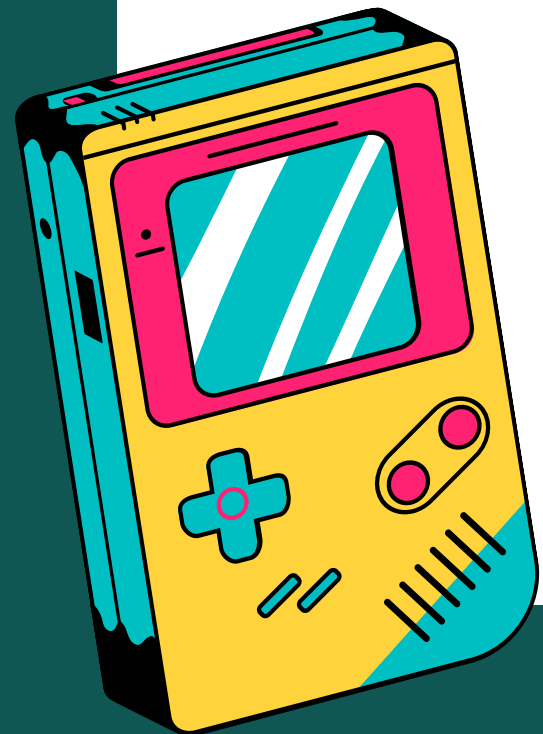
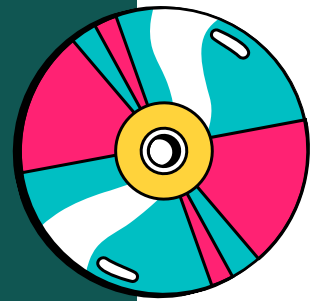
Lessons + Ag Mags + Presentations + Resources



90 County-Level Coordinators



200,000+ Illinois Students



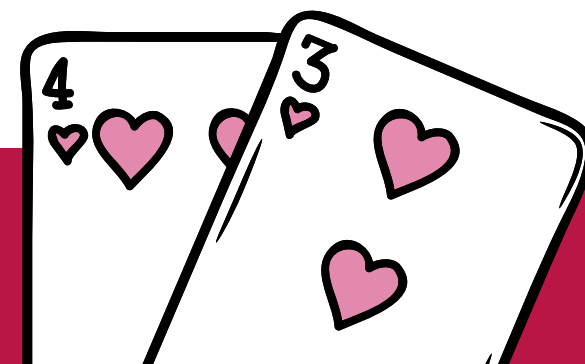
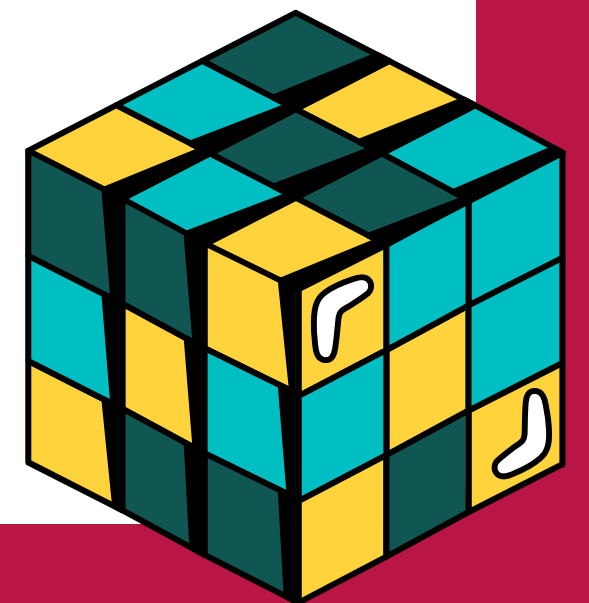


GAMEPLAY IN THE CLASSROOM



According to research, incorporating game play into the classroom can:

- Increase student participation
- Foster social and emotional learning
- Motivate students to take risks
- Improve student attitudes toward learning
- Boost academic scores



WATER CYCLE TOWER GAME



- Blue = Precipitation (6)
- Green = Uptake water (4)
- Pink = Sublimation (4)
- Red = Evaporation (4)
- Brown = Collects (4)
- Orange = Condensation (6)
- Yellow = Transpiration (4)
- Purple = Flows (4)



As a MATTER of Fact

Water matter of factually water is matter. Water is a molecule made up of three atoms that are bonded together. Two atoms are hydrogen, H₂, and one oxygen, which is why we call it H₂O. One drop of water contains billions of H₂O molecules. Although water may seem simple because it has no taste, smell, or color, it is more than it appears to be.

Water is known as the "universal solvent" because more substances dissolve in water than any other liquid. This means that wherever water flows, whether that is in the ground or through our bodies, it picks up nutrients, chemicals, and minerals and carries them along.

The amazing thing about water is that it is the only natural substance on Earth that can be found in all three physical states of matter: solid (ice or snow), liquid (water), and gas (water vapor or steam). Water vapor, in its gaseous state, forms the clouds. Water vapor, in its liquid state, is what makes us feel sticky on humid days. The solid form of water is known as ice. Ice can be found in our freezers or in the Arctic and Antarctic oceans as icebergs. These three states are incredibly important because they allow water to go through a process called the Water Cycle.

There is nothing like taking a drink from a cold glass of water on a hot summer day. Drinking that water is very important for our health. But did you know that the water you drink today is the same water that the dinosaurs drank? That is because Earth has been recycling water for over a billion years!

All the water on Earth moves between oceans, rivers, lakes, the soil, and the atmosphere in an ongoing cycle called the water cycle, which is powered by the sun. At the same time, the water cycle is constantly changing between the three states of matter: solid, liquid, and gas.

THE WATER CYCLE

SUBLIMATION
Water can change from a solid to a gas without becoming a liquid first. This means that Earth's ice, like glaciers and without even melting, can evaporate directly into the atmosphere as water vapor. This process is called sublimation.

TRANSPIRATION
Trees, grass, and many other plants also use water to live. As they grow, they release water vapor into the air. This process is known as transpiration.

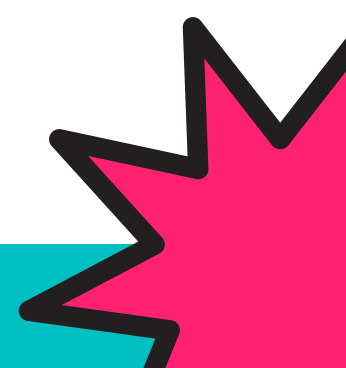
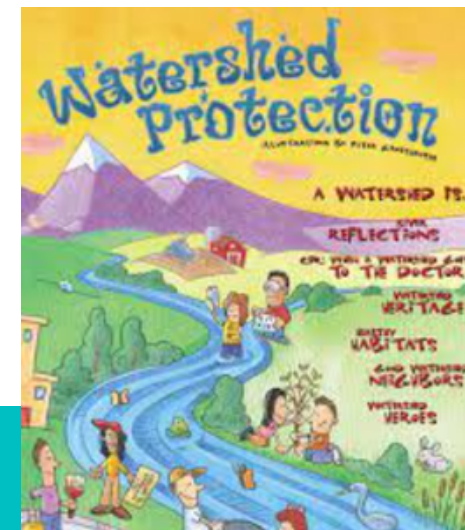
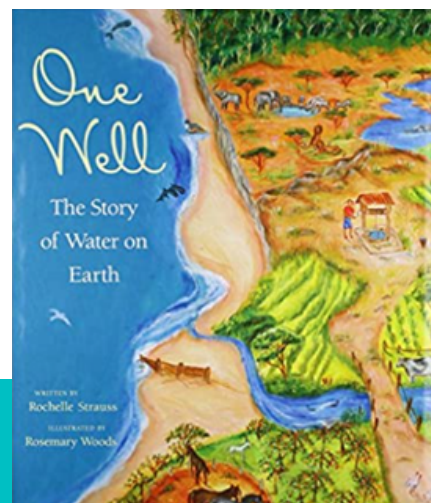
EVAPORATION
Heat from the sun heats up the surface of the earth, which causes the temperature of water to increase. When the temperature of the water rises, some of the water turns into a gas called "water vapor." This process is called evaporation.

CONDENSATION
As water vapor rises into the atmosphere, it begins to cool. As it cools, the water vapor molecules are packed together, and form clouds. This process is called condensation. Sometimes the atmosphere causes the clouds to move all around the earth.

PRECIPITATION
Water droplets that form the clouds continue to condense. Eventually they become too big and heavy for the atmosphere to hold them and so they fall back down to the earth's surface. This process is known as precipitation. Precipitation can be in the form of rain, sleet, snow, or hail, depending on the temperature of the atmosphere in which it is falling through.

COLLECTION
The fallen precipitation is then "collected" in bodies of water like rivers, streams, oceans, glaciers, meadows, watersheds, and reservoirs. Eventually, the water will evaporate back into the atmosphere, beginning the cycle all over again. How the water is "collected" depends on where on Earth it lands. Sometimes, there are many different climates and temperatures that will affect the state of matter that is precipitated.

RUNOFF
Sometimes areas can experience flooding in which there is too much water for the soil below to soak up. When that happens, the extra water will flow over the land and down to low areas due to gravity. This is called runoff.



CAREERS IN AGRICULTURE

CAREERS IN AGRICULTURE

AGRICULTURAL MECHANICS

CAREERS IN AGRICULTURE

FOOD SCIENCE

Illinois Ag Mag Careers
An agricultural magazine for kids

AGRICULTURE THE SCIENCE OF FARMING

Employment in Agriculture, Food, and Forestry Occupations 2019
22.2 million (10.1% of all employment)

| Occupation | Employment (Million) |
|---|----------------------|
| Food Service & Drinking Places (24.4% of U.S. Employment) | 13.0 |
| Food & Beverage Stores (11.4%) | 6.4 |
| Food, Beverage, & Tobacco Manufacturing (11.2%) | 6.0 |
| Textile, Apparel, & Leather Manufacturing (11.2%) | 6.0 |
| Other | 2.8 |

ILLINOIS + AGRICULTURE = A GREAT COMBINATION

Approximately 25% of the land in Illinois is dedicated to agriculture on about 72,000 farms. There are almost one million agriculture-related jobs in Illinois, which is over 13% of employees in the state. Food and agriculture production, processing, and distribution contribute significantly to the state's economy. Illinois is one of the top-ranking states in meat packing, soybean processing, dairy manufacturing, corn processing, feed milling, and vegetable processing. The state's fertile soil, favorable climate, availability of good transportation, and extensive industry make it one of the top agricultural states in the nation.

3.4 Million Acres of Federal Land & Water (FWS)

1.9 Million Acres of Private Land (USDA)

EDUCATION VOCABULARY

HIGH SCHOOL DIPLOMA: certificate of graduation awarded after completing high school.

ASSOCIATE DEGREE: degree given to a student who has completed two years of study at a junior college, community college, college, or university.

BACHELOR'S DEGREE: degree given to a student after completing undergraduate studies that usually last four years.

MASTER'S DEGREE: degree given to a student after completing one or two years of additional study following a bachelor's degree.

DOCTORATE DEGREE: was called a PhD, typically the highest formal degree given to a student after completing additional study following a master's degree.

CERTIFICATION: formal papers showing completion of a test or procedure, or the reaching of a certain level of achievement, in a particular subject.

CAREER VOCABULARY

CAREER: a job or profession that someone does for a long period of their life.

ECONOMY: a system of making and trading things of value.

ECONOMICS: a social science that deals with the production, distribution, and consumption of goods and services.



ANDREA BRAUNDMEIER-FLEMING & ANNIE NEWELL FUGATE

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.

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 product of wet corn milling, and milk sugar. The 's development of deep vat techniques to grow old cultures, called deep fermentation, added the missing piece of the



ys after the bombing of Pearl Harbor, which happened on December 7, 1941, 'atives met with U.S. drug companies, which agreed to attempt large-scale 'sing the new methods. The combined work of many researchers, including Moyer, resulted in making penicillin available in mass quantities by June 6, 1945. Moyer's colleagues were wounded on D-Day.





COMMODITY UNO



How will we sustainably feed nearly 10 billion people by the year 2050?

Journey 2050 takes students on a virtual farm simulation that explores world food sustainability. Using an inquiry based approach the program encourages students to make decisions and adjust them as they see their impact on society, the environment and the economy at a local and global scale. The students hear from farmers across the globe.

As the student interacts with each family they learn the role of best management practices in feeding the world, reducing environmental impacts and in improving social performance through greater access to education, medical care and community infrastructure. Our journey to feeding the world has started. Join us.

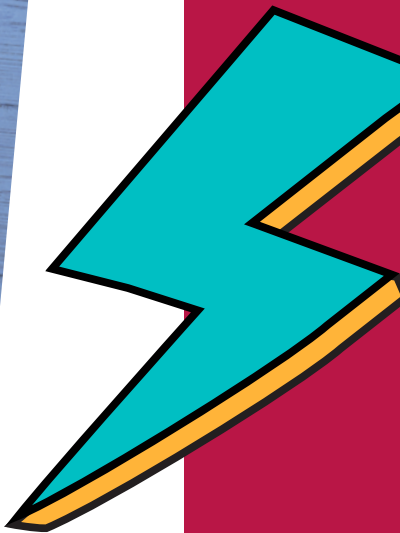
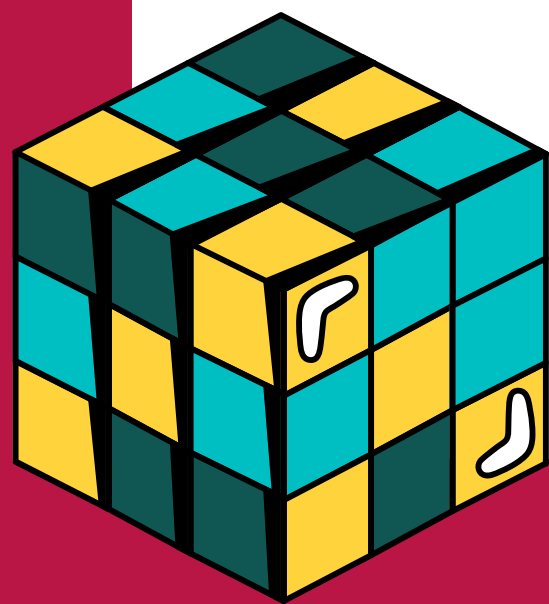
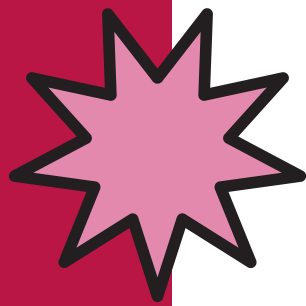


Play the Game Now

WORLD POPULATION:
7,647,470,675
Births this year: 16,971,442
Deaths this year: 7,217,101

ARABLE LAND:
8,505,949,165 (ha)
Amount Lost: 91,029,481 (ha) *since Jan 1999

| Sustainability Farming Game | | | | Geography Game | | Career Game |
|-----------------------------|-----------|-------|---------|----------------|-------|-------------|
| | | | | | | |
| Introduction | Nutrients | Water | Economy | Land Use | World | Careers |



HEALTHY TREES: APPLE ADDITION

MIGHTY MACRONUTRIENTS STUDENT WORKSHEET

Directions: Cut out the squares on the following page and try to match them to their correct spot on this board. When your teacher has checked them and they are all correct, glue them into place.

| | STANDS FOR: | PROVIDES: | SIGNS OF DEFICIENCY: |
|---|-------------|-----------|----------------------|
| N | | | |
| P | | | |
| | | | |

MIGHTY MACRONUTRIENTS STUDENT WORKSHEET

Directions: Color in the leaves on these soybean plants according to the descriptions about their soil nutrient levels. Then, answer the multiple choice question for each.

This soybean plant is growing in a soil that is **deficient in Nitrogen**. Color the leaves the correct color.

What does **Nitrogen** provide for the plant?

- Production of roots and flowers
- Quick plant growth & high quality fruits
- Chlorophyll production for green color

This soybean plant is growing in a soil that is **deficient in Phosphorus**. Color the leaves the correct color.

What does **Phosphorus** provide for the plant?

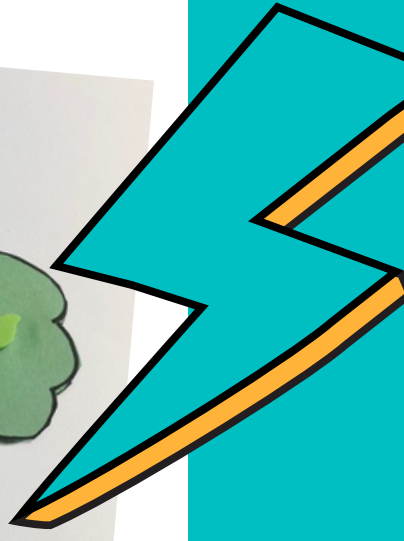
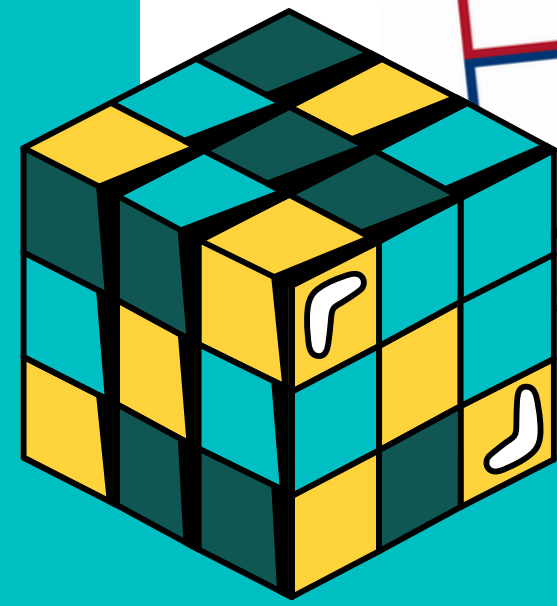
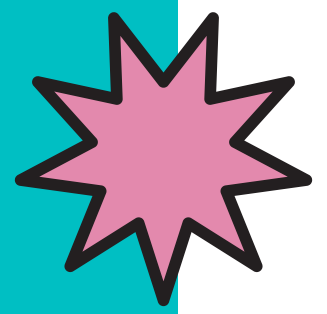
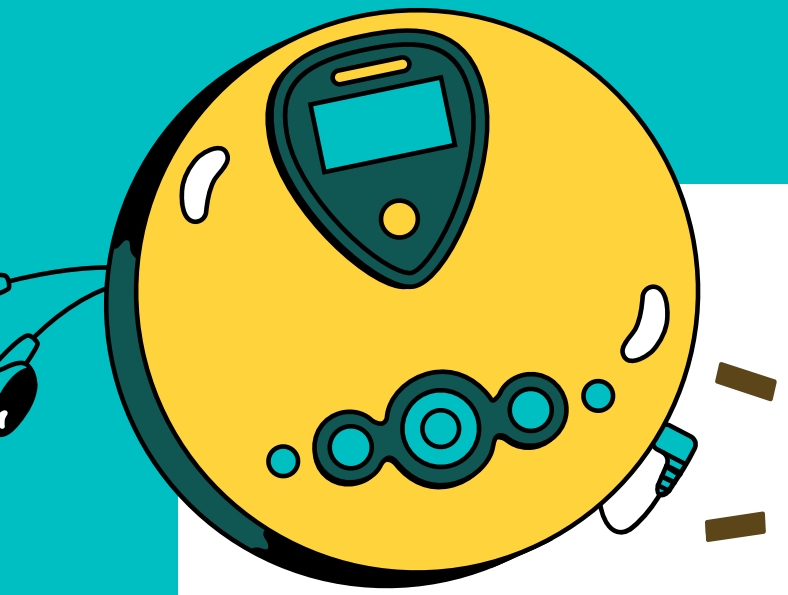
- Production of roots and flowers
- Quick plant growth & high quality fruits
- Chlorophyll production for green color

This soybean plant is growing in a soil that is **deficient in Potassium**. Color the leaves the correct color.

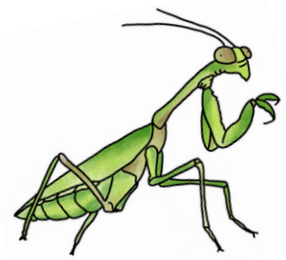
What does **Potassium** provide for the plant?

- Production of roots and flowers
- Quick plant growth & high quality fruits
- Chlorophyll production for green color

For more great educational agriculture resources, visit: agintheclassroom.org



GOOD BUGS, BAD BUGS MEMORY



Praying Mantis: Adult
Beneficial



Ladybug: Adult
Beneficial



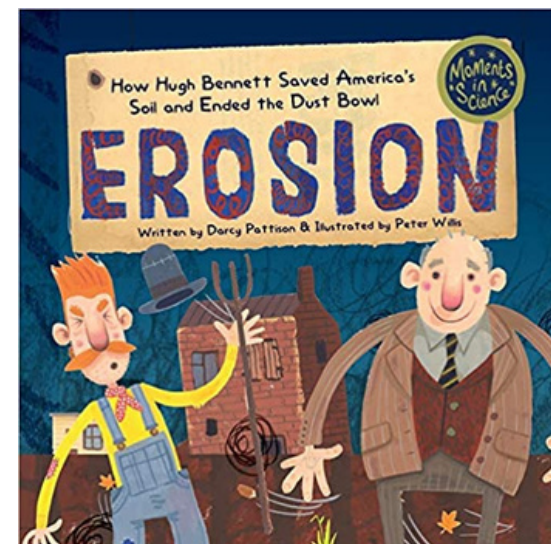
Ladybug: Larva
Beneficial



Butterfly: Adult
Beneficial



Butterfly: Larva
Beneficial



AG-VENTURE WITH SOIL

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

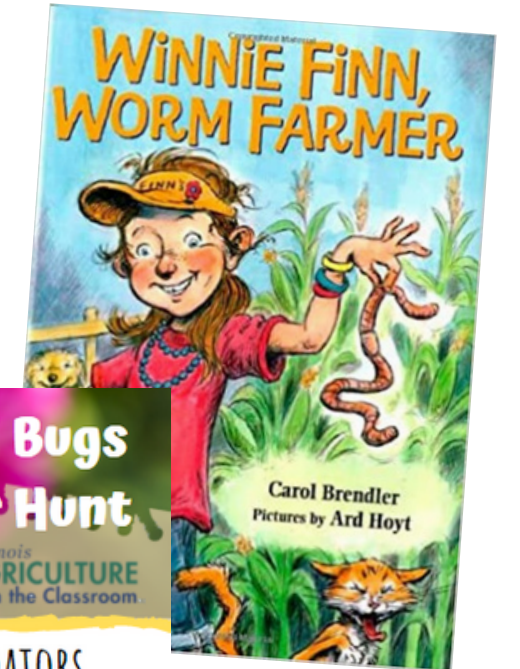
Use one of the quotes in the "Say it With Soil" column. Read the quote and then use information from the ag mag to explain and support that quote.

Below is a list of various ways that both you and farmers can conserve soil. Read through them and determine which are true and which are false.

| | |
|--|--------------------------|
| Farmers can use cover crops to replenish nutrients in the soil. | <input type="checkbox"/> |
| You should walk on the grass and soil because it's softer than walkways. | <input type="checkbox"/> |
| Everyone should practice the three R's: Reduce, recycle, and reuse. | <input type="checkbox"/> |
| Farmers should remove buffers so that surface water can flow wherever it wants to. | <input type="checkbox"/> |
| Farmers can use technology to analyze their land and areas of erosion. | <input type="checkbox"/> |
| You can inform your friends and family about the importance of protecting soil. | <input type="checkbox"/> |

Soil is like an onion, it has layers! Well maybe not quite like onions, BUT there are layers! So, what are those layers? Match the layer name in the left column to the correct definition in the right column. Then, match the definition to the correct layer in the diagram on the right side.

| | |
|-----------------|--|
| Topsail | This layer is made up of sand, silt, and clay but has significantly less organic material. It's about one foot below the surface. |
| Bedrock | This is more compact and rocky than the layers above it and can be found about three feet below the surface. |
| Humus Layer | This layer is comprised of organic matter like trees, plants, and grass, as well as decomposing matter like fallen leaves. This is the layer we walk on! |
| Subsoil Layer | Most nutrients, organisms, and roots are in this layer. It is composed of sand, silt, clay, and organic material. |
| Parent Material | A layer of hard rock. |



Beneficial Bugs Scavenger Hunt

POLLINATORS

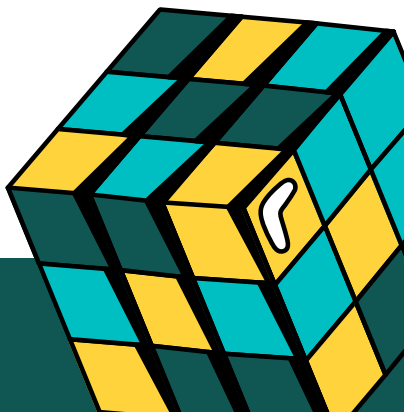
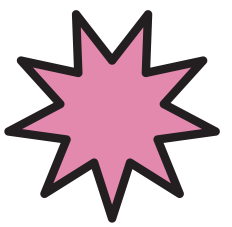
- Butterfly
- Bee

PREDATORS

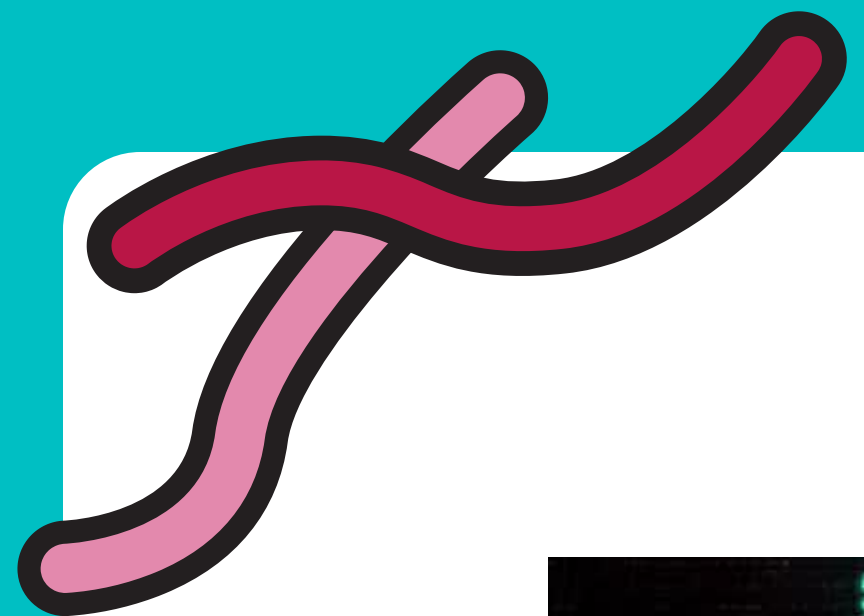
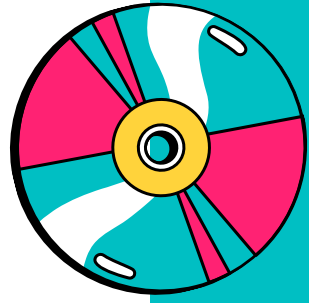
- praying Mantis
- Ladybug

DECOMPOSERS/RECYCLERS

- Pill Bug (Rollie Pollie)
- Earth worm
- Ground Beetle
- FLY



INS & OUTS





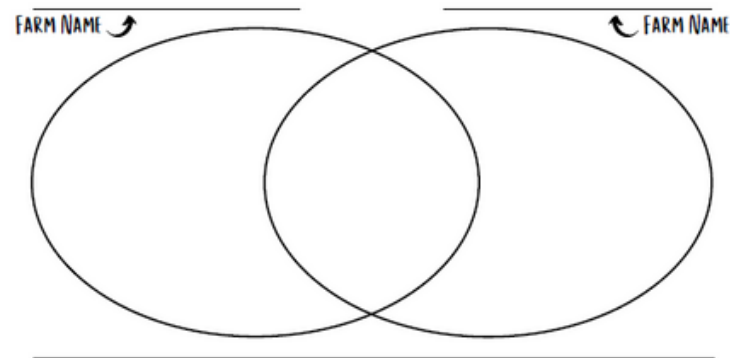
INS & OUTS



AG-VENTURE WITH FARMERS MARKET

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

Pick two of the three farms featured on the inside of the Ag Mag. Then, compare and contrast those two farms using the Venn Diagram below.



If you go to a farmers market in May, what are all the fruits and vegetables you might find? List them below:

Fact Finder! Read through the Ag Mag and finish the sentences below.

- There are over 10,000 varieties of _____.
- _____ are 95% water.
- Illinois is the #1 producer of _____.
- National Farmers Market week is celebrated the first week of _____.
- In Illinois, we import _____% of the food we eat.
- There are over _____ farmers markets in Illinois.

For more great educational agriculture resources, visit: agintheclassroom.org

Illinois AGRICULTURE in the Classroom

FARMERS MARKET SCAVENGER HUNT

CHECK OFF ALL THE ITEMS YOU CAN FIND AT TODAY'S MARKET!

| | |
|---|---|
| <input type="checkbox"/> vegetable you've never tried | <input type="checkbox"/> something red |
| <input type="checkbox"/> dessert ingredient | <input type="checkbox"/> eggs in a carton |
| <input type="checkbox"/> say hello to a farmer | <input type="checkbox"/> bouquet of flowers |
| <input type="checkbox"/> something yellow | <input type="checkbox"/> dairy product |
| <input type="checkbox"/> something that grows on a vine | <input type="checkbox"/> person who sells meat |
| <input type="checkbox"/> salad greens | <input type="checkbox"/> something sweet |
| <input type="checkbox"/> loaf of bread | <input type="checkbox"/> jelly in a jar |
| <input type="checkbox"/> honey | <input type="checkbox"/> one of your favorite foods |



ODE TO A VEGETABLE

Grade Level
4-8

Length of Lesson
45-60 minutes

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

Materials Needed
• Copy of *Ode to an Onion* by Alexandria Giardino

Standards

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

Lesson Summary

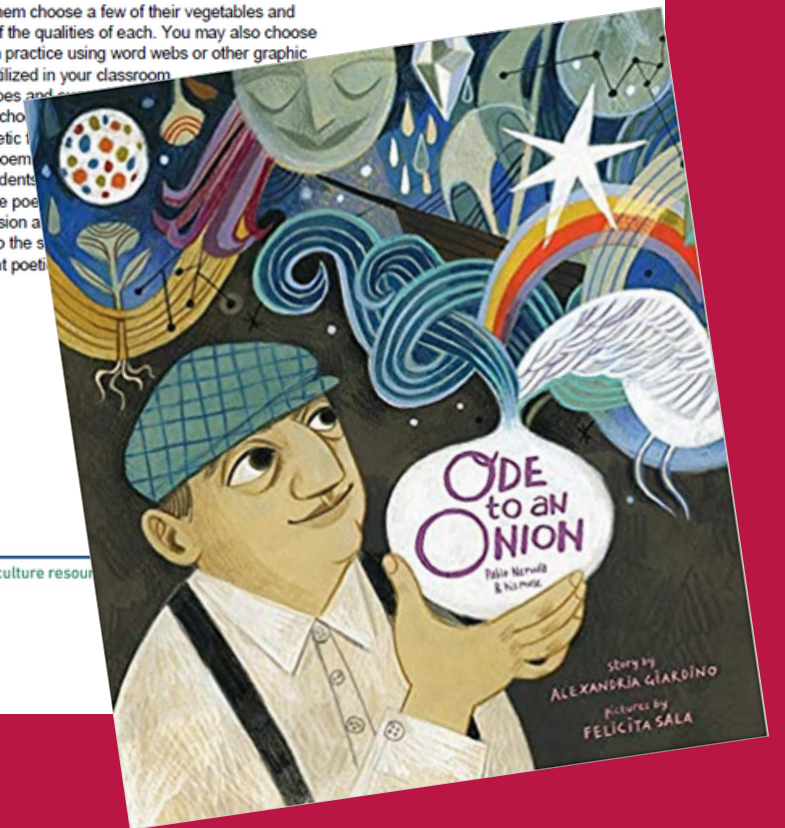
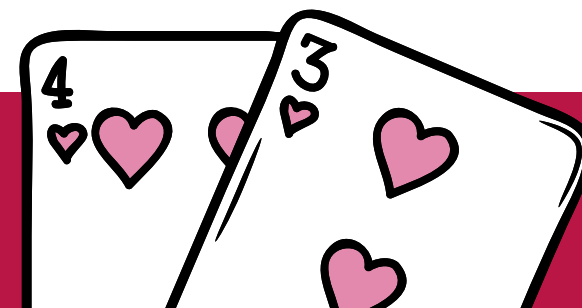
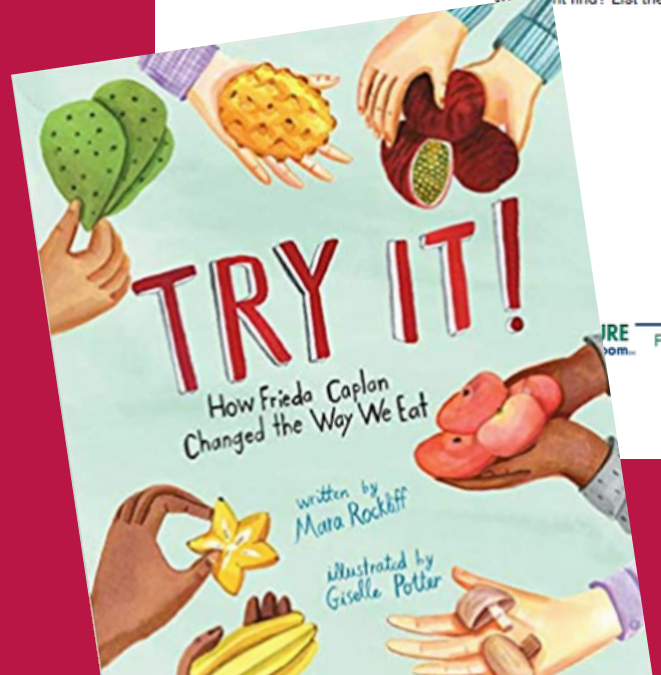
This lesson is designed to introduce or strengthen students' skills of writing poetry. Students will write multiple "odes" to vegetables using simple, common poetic forms. This lesson would work well in a larger poetry unit.

Suggested Sequence of Events:

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









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LOGIC PUZZLE



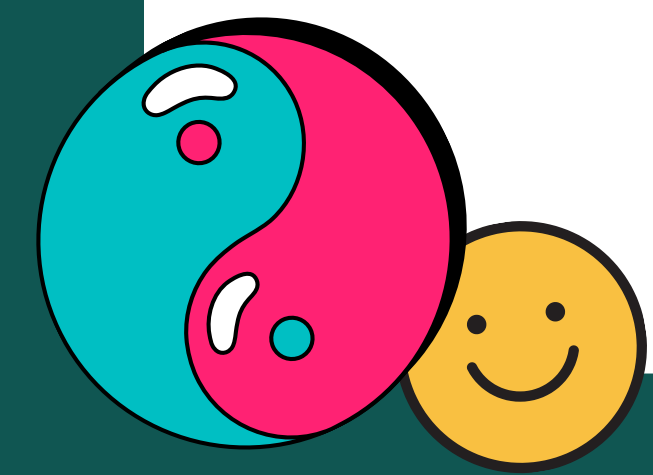
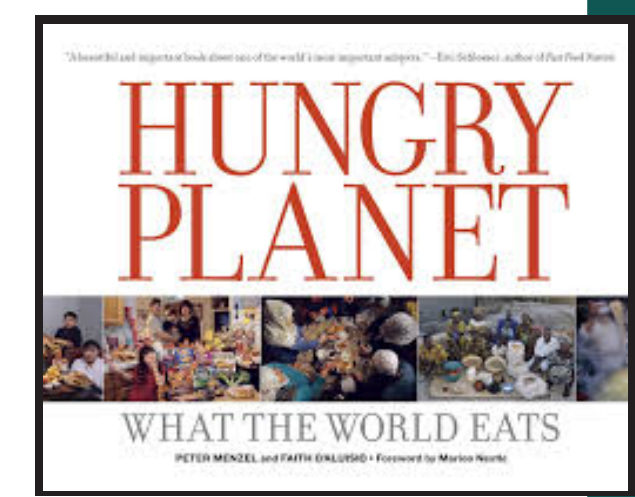
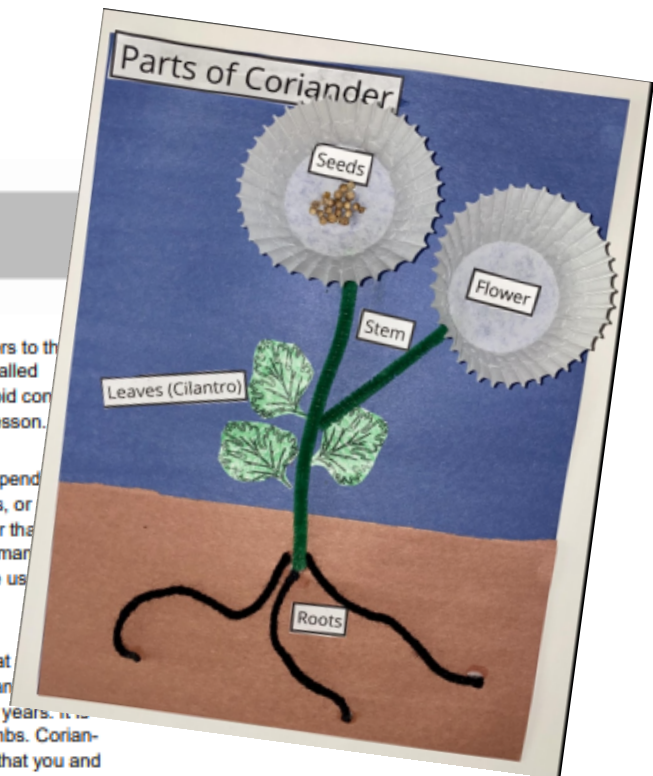
| | |
|--|---|
| <p>Flower</p>  | <p>Fruit</p>  |
| <p>Seed</p>  | <p>Leaf</p>  |
| <p>Stem</p>  | <p>Root</p>  |

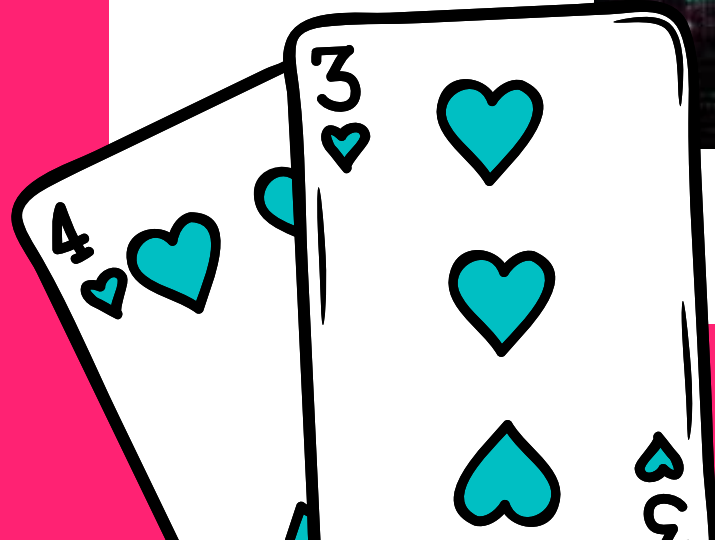
THE CORIANDER PLANT

Did you know that coriander and cilantro come from the same plant? Coriander refers to the seeds of the plant and cilantro is the leaves. In the U.S., the plant itself is typically called "cilantro." But in many other countries, the plant is referred to as "coriander." To avoid confusion with the different plant parts, we can choose to refer to the plant as "coriander" in this lesson.

The parts of the coriander plant have many uses and the way that they are used depends on one's culture. Many uses of coriander can be seen in cooking. In Mexico, the leaves, or cilantro, are used in salsa, guacamole, and garnish. In Indian cuisine, coriander seeds rather than leaves are used. The seeds are ground into spices and used in garam masala and many other curry recipes. They are also used in chutneys and salads. The roots of the plant are used in Thai food to make curry pastes.

Aside from cooking, coriander also has many medical uses. It has been used to treat type 2 diabetes and has worked as an effective treatment for type 2 diabetes. Coriander has been used in traditional Indian medicine as a diuretic. Coriander has been used for many years and is considered one of the oldest herbs, supposedly being found in ancient Egyptian tombs. Coriander is a versatile plant with many cultural connections. What other plants and foods that you and your students eat have a connection to other cultures and their traditions?





SPOT IT!



SPOT IT!

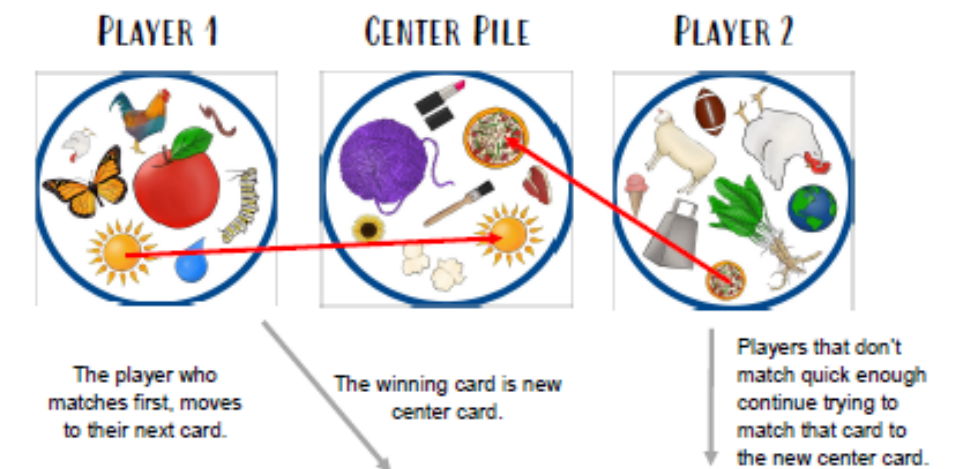
From the clothes you wear and the food you eat, to the sun in the sky and worms below your feet, the world of agriculture is all around you! This game highlights various parts of the world of agriculture all throughout the supply chain, environment, and more.

Directions:

1. Shuffle the deck of cards and deal them out, one card at a time to each player, until they are gone. Players should keep their cards in a stack, face down.
2. Put the very last card down in the center of the players, face up.
3. To begin playing, each player will flip over the top card of their stack and try to find the one symbol on their card that matches the center card.
4. When the matching symbol is found, the player will quickly lay their card down on the center pile and say, out loud, which symbol they've matched.
5. Players will continue to find the one matching symbol on the top card in their hand to the center card. Continue this until one player runs out of cards.
 - Every card has only one matching symbol to every other card. Symbols will be in different locations and have different sizes on various cards.
5. Whoever runs out of cards first, wins!

Example:

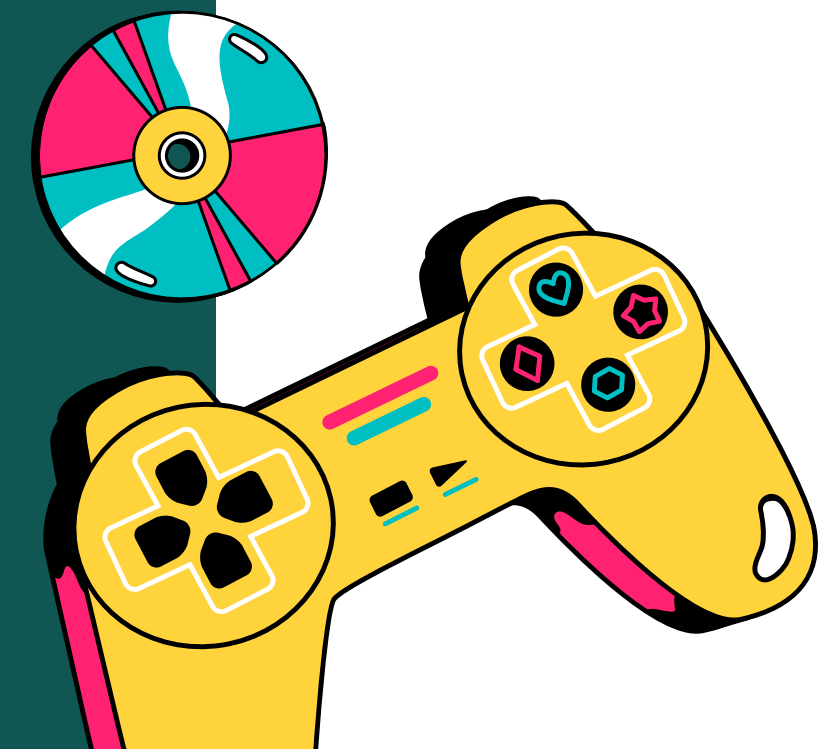
Player one's card has a sun symbol that matches the center card. Player two matches the pizza. Whoever finds the match and lays it down first, while saying their symbol out loud, moves onto their next card.



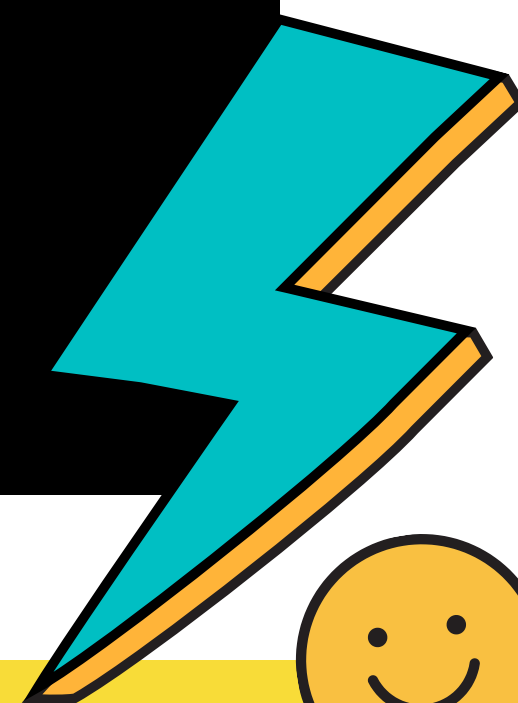
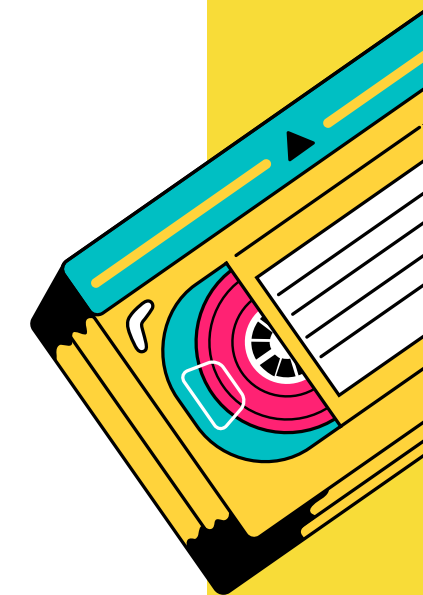
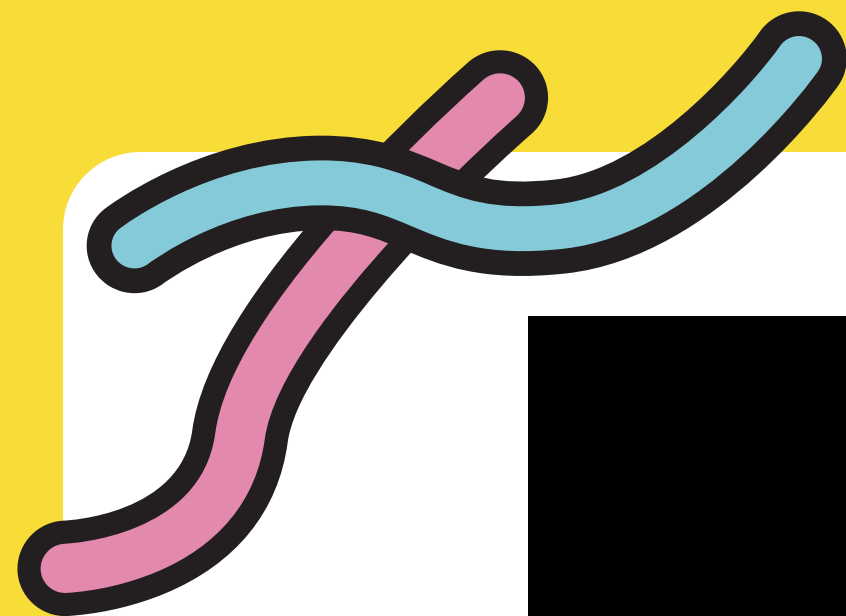
Player one laid their card down first and said "sun" before player two could spot their matching symbol. Now, players have to match their cards to player one's card that was laid in the center.



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10:00



CORN SOY HOGS CATTLE PUMPKIN



CORN SOY HOGS CATTLE PUMPKIN TEACHER GUIDE

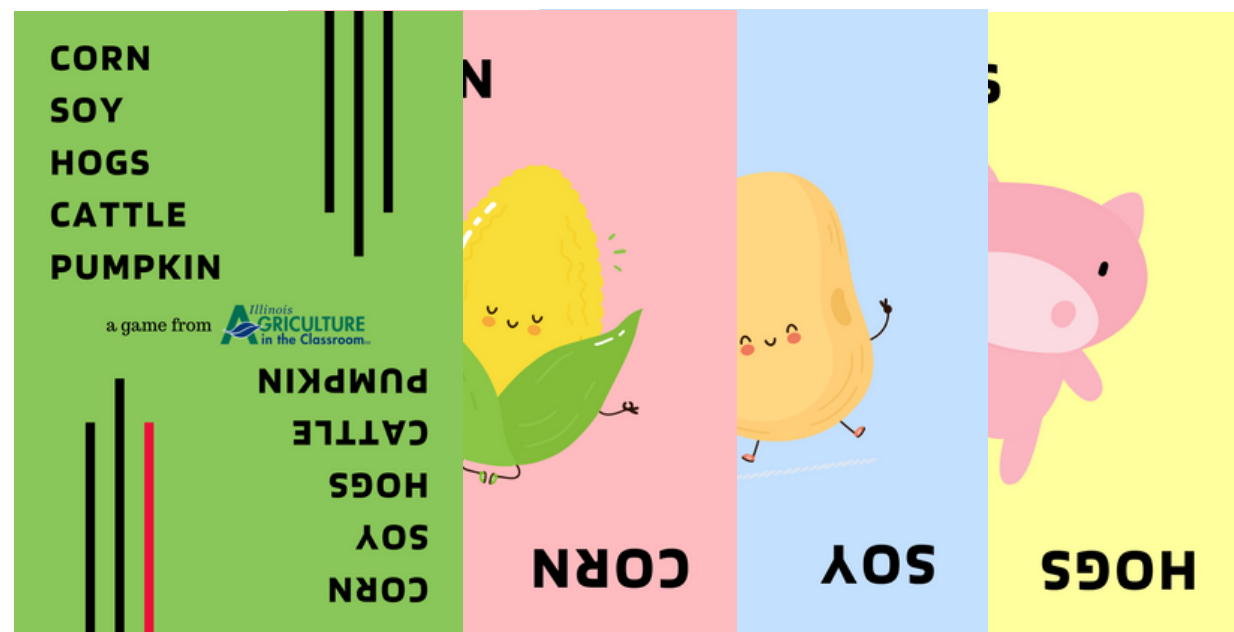
Game Play:

Play continues as outlined on Instructions Card 1, until the card just laid matches the word spoken by the player (eg., they put down a 'Hog' while saying 'Hogs'). At this point, all the players must SLAP their hands on top of the pile of cards in the center, and the LAST player to do so takes the entire pile, and puts them on the bottom of the pile in his/her hand. He/She then starts off the next round saying, "Corn," the next player, "Soy," the next player, "Hogs," etc...

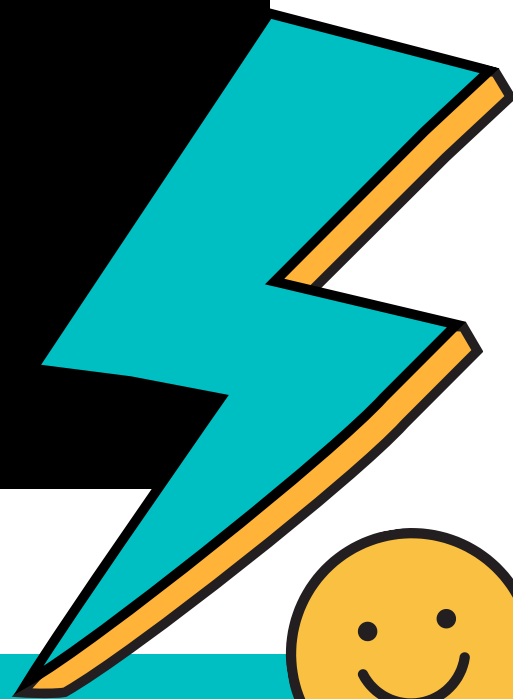
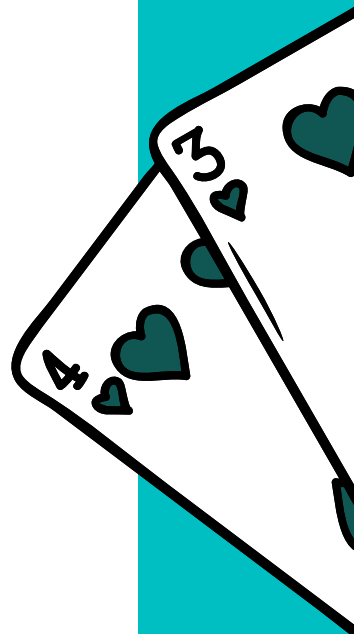
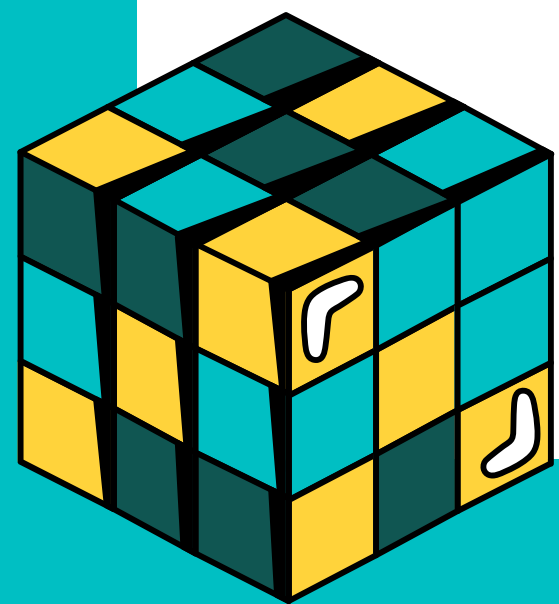
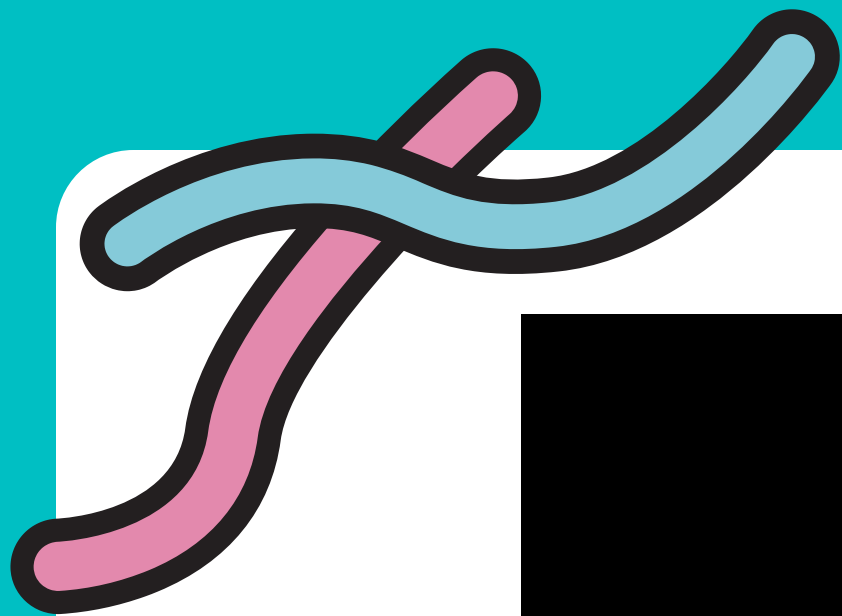
IF the card laid pictures the commodity holding a PRODUCT that comes from that commodity, all players must also - in addition to slapping the deck - name another PRODUCT that comes from that commodity (i.e. - "corn syrup" from Corn, or "bacon" from Hogs). The last to do so takes the center pile!

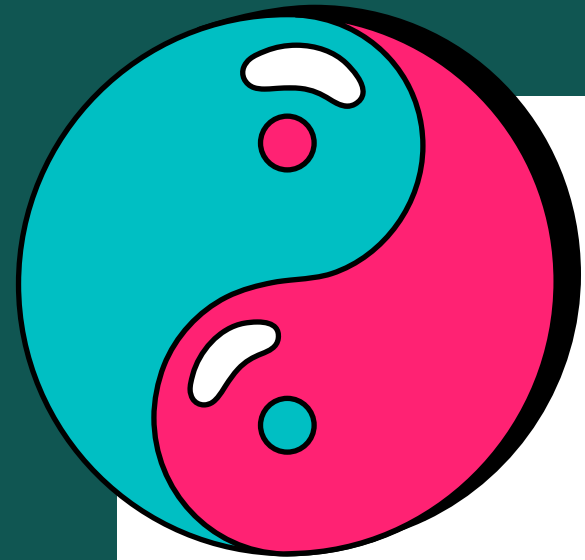
The following are some ideas of acceptable products originating from each commodity that the players might NAME while they SLAP the deck. Other products could be named!

| | | | |
|---|---|---|--|
| CORN <ul style="list-style-type: none"> Sweet Corn Canned Corn Corn Syrup Cornstarch Pet Food | <ul style="list-style-type: none"> Livestock Feed Ethanol Vegetable Oil Popcorn Corn Flour | <ul style="list-style-type: none"> Breakfast Cereal (Corn Flakes, Fruit Loops, etc) Corn Bread Corn Chips (Doritos, Fritos, tortilla chips, etc) |  |
| SOY <ul style="list-style-type: none"> Edamame Tofu Soy Milk Soy Yogurt Soy Sauce | <ul style="list-style-type: none"> Soy Flour Biodiesel Livestock Feed Vegetable Oil Tempeh | <ul style="list-style-type: none"> Ham Bacon Pork Chops Pork Loin Ground Pork | <ul style="list-style-type: none"> Sausage Pork Ribs Pet Food Insulin Suede  |
| CATTLE <ul style="list-style-type: none"> Steak Hamburger Ground Beef Beef Ribs Milk | <ul style="list-style-type: none"> Cheese Yogurt Ice Cream Butter Sour Cream | <ul style="list-style-type: none"> Pumpkin Pie Pumpkin Bread Pumpkin Spice Pumpkin Seeds Pumpkin Blossoms |  |



10:00





GAME OVER

Thanks for playing!

