



Pre-Service Teacher Guide

An introduction to agriculture in the classroom



**Kansas Foundation
for AGRICULTURE
IN THE CLASSROOM**



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Dear Pre-Service Teachers,

We are excited to introduce you to Kansas Foundation for Agriculture in the Classroom! This guide contains information and lessons you can use immediately to support your teaching. We are here to help you incorporate agriculture into your classroom by providing a one-stop-shop for agriculture information, lesson plans, resources, and partner activities.

Introducing students to agriculture helps them develop soft skills and connect classroom material to the world around them. The benefits for the classroom include incorporating hands-on activities and project-based learning to increase student engagement and reduce behavioral issues. On a broader scale, adding agriculture into core subjects helps young people learn about the origins of their food, fiber, and fuel. This knowledge develops more educated consumers and may spark interest in agriculture careers, supporting the need to increase food production for a growing global population.

Kansas Foundation for Agriculture in the Classroom is a non-profit organization committed to providing teachers with agricultural experiences, credible resources and standards-based, hands-on lesson plans. Connecting classrooms to Kansas agriculture is the mission that guides all of KFAC's programming. All KFAC materials are designed with you, the educator, in mind.. We hope this guide inspires and prepares you to start incorporating agriculture into your classroom.

We look forward to working with you to provide Kansas students with accurate information about Kansas agriculture. It all begins with you and the desire to help others learn about agriculture!

We wish you the best of luck in your teaching career!

Kansas Foundation for Agriculture in the Classroom

P.S. Watch for our educator mini-grants to help you get started when you are ready more a larger project.



Incorporating Agriculture

Improves learning

Teaching agriculture helps students develop an understanding of the world around them: how things grow, live, and die. Using real-life situations can assist a student struggling with a concept, master it. Agriculture puts chemistry, biology, and physics into everyday-life applications. Each day farmers face problems such as how to mix the components of the ration to feed the pigs, what nutrients specific plants need to grow, and how to use the new app for the planter.

Reduces Behavioral Issues

Is there an easier way to engage all types of learners in the classroom than through in-class projects? Have them plant seeds and watch them grow, hatch baby chicks, make butter or ice cream, or incorporate some of the many hand-on activities available from KFAC or our educational partners. Projects engage visual, auditory, and kinesthetic learners as they learn core subjects, sometimes without them even realizing they are learning. Engaging lessons reduce behavioral issues and reinforces the positive behavior of participation, improving the class environment for all.

Increases Agricultural Literacy

From flowers to potatoes, cows to pigs, and tractors and soil, teaching students about farming introduces knowledge about how their food reaches their tables, clothing makes it to stores, and fuel becomes usable. Students will also learn about the natural resources that support agriculture and the direct connection of natural resources and agriculture to quality of life. For many students, this could be their only chance to learn about where their food comes from.

Impacts the Future

Today's youth are 3 to 4 generations removed from direct agriculture and we see a growing gap in agricultural literacy. These youth will be tomorrow's consumers, leaders, and policymakers. You will have a direct influence on future generations' knowledge on all things including agriculture. Imagine a world where policy inhibits production to the point there are empty shelves at the grocery store. You may have experienced some of that during the Covid-19 pandemic. Educating young people will be vital in feeding the growing population of the world set to reach almost 10 billion by 2050, an increase of 2 billion people.

Opens New Doors

Agriculture will need to significantly increase the workforce, technology, and production to meet the needs of our growing population. This growth opens up a new realm of career possibilities and opportunities for young people. In 2020, less than two percent of the population lives on a farm, but 1 in 10 jobs in the United States are provided by agriculture and its related industries. Imagine how this will evolve by 2050.

Let us help you make an impact on the next generation!

KFAC Website



Virtual Agriland

Check out our Virtual Agriland featuring virtual tours, lesson plans and more.



Get Involved

Our work would not be possible without your support. Learn how you can be involved in our future success.



Partners

Our educational partners offer great resources and activities. Look into their offerings and find our more.

Welcome! We are here to help you incorporate agriculture topics into your classroom curriculum. If you aren't sure where to start, check out the start here page on our website at ksagclassroom.org/teacher/start/. This page will guide you to resources that will help you be successful. All lessons and resources are targeted toward specific grade levels, but most lessons can easily be adapted to other grades.

Navigating our website is easy. Most of what you will be looking for is located in the education center. You will find Kansas and national lesson plans as well as the full version of lessons in this guide. Be sure to browse the resource center to find resource posters, worksheets, and companion resources. Find out about the latest grants and scholarships in the teacher center and stay informed about current programming by signing up for our newsletter under happenings. Learn more about Kansas agriculture under about us.

The best way to start incorporating agricultural concepts in your classroom is to start with one lesson. One lesson at a time you can build your confidence and curriculum. In this guide, we have some suggestions for great lessons to use first, but we also have lesson planning kits with free materials for a supplemental hands-on activity based on the grade you teach. You can order a free kit for your classroom in our resource center under order resources.

If you have any questions or need help, feel free to reach out to us at info@ksagclassroom.org.

Agriculture Pays

Overview:

Through exploring agricultural careers, students will collaborate and role-play how different facets of the agriculture industry interact and provide for consumers.

Objective:

Students will be able to describe agricultural jobs, listen to each other, and interact while being respectful of differences.

Instructions:

Ask the students the following questions; "Do you like to eat?" "What are some of your favorite foods?" "Where can you purchase these items?" "How do these items get to the grocery

store?" "Who grows these foods?" "What jobs are involved in getting food to your table?"

1. Talk with students about five steps (jobs) in the farm-to-food chain: farmer, packager, truck driver, and consumer.
2. Group students into five groups and assign each group one step (job) in the food chain. Have students discuss the responsibilities of their group's job within their groups.
3. Supply each group with a career vest (brown grocery bag cut to the shape of a vest). Have each group work together to decorate the vest to represent the job.
4. Have each group share with the class why they decorated their career vest the way they did.

Enrichment Discussion:

Discuss how a commodities get from the farm to the consumer (e.g. potatoes, milk, meat, apples.) Students may work in groups to discuss different commodities and report to the class.

Suggested Book:

Jobs Farmers Do by Dan Yunk

Full Lesson:

<https://agclassroom.org/matrix/lesson/291/>

Targeted Grade Level:

K-2

Kansas Standards:

SECDMS: SD: IP 1,3, 5, 7

Time:

30 minutes

Materials:

Paper grocery bags for vests

Crayons/markers

Supplies to decorate vests



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Apple Earth

Overview:

This activity uses an apple as a model of the Earth to help students become aware of the small fraction of the Earth's surface that can be used to produce food. Students will also learn the importance of soil in agriculture and food production.

Objective:

Students will be able to describe the importance of soil and the tiny amount of land available for use to grow food.

Instructions:

Soil is one of our most important natural resources on the earth's surface. Many living things depend on it for food, including people. Not all soil is good enough for plants to grow. Complete this activity to learn how little soil we have to grow food.

1. Cut an apple into four equal parts. Three parts represent the oceans of the world. The fourth part represents the land area.
2. Cut the land section in half lengthwise. Now you have two $\frac{1}{8}$ pieces. One section represents land such as deserts, swamps, antarctic, arctic, and mountain regions. The other $\frac{1}{8}$ section represents land where a man can live and may or may not be able to grow food.
3. Slice this $\frac{1}{8}$ section crosswise into four equal parts. Three of these $\frac{1}{32}$ sections represent the areas of the world that are too rocky, too wet, too hot, or where soils are too poor to grow food. In addition, there are land areas that we can't grow food on because cities and other man-made structures are built on it.
4. Carefully peel the last $\frac{1}{32}$ 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.

Enrichment Discussion:

Why is soil so important? Think about its impact on agriculture and the foods you eat.

Go Further:

Read the Kansas Kids Connection Magazines for Water

Targeted Grade Level:

3-5

Kansas Standards:

NGSS 3-LS3-2, 3-ESS3-1;

4-ESS1-1, 5-LS2-1

Time:

20 minutes

Materials:

Large apple

Knife

Cutting board



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Edible Soil Profile

Overview:

Soil is one of our most important natural resources and is a naturally occurring mixture of minerals, organic matter, water, and air, all of which combine to form the surface of the Earth. In this lesson, students will create an edible soil profile and study how soils are formed.

Objective:

Students will be able to identify soil layers and the characteristics of each layer and then describe how the soil changes over time.

Procedure:

1. Have students wash their hands.
2. Give each student one cup.
3. Have each student layer the ingredients in the cup, allowing them to have different amounts of each ingredients to demonstrate how soil layers differ. Ideally, students would layer the following: 2 vanilla wafers, 1/4 cup marshmallows, 1/4 cup cheerios, 2 tablespoons chocolate puffs, 1 tablespoon M&Ms, 2 gummy worms.
4. Discuss the layers of a soil profile, particle size, and how soils are formed while students enjoy their Edible Soil Profile.
5. Ask students to identify the layers in their cup and explain, as they eat, that if we do not protect our soil it will wash away with the weather just as their profile is depleting as they eat.

Enrichment Discussion:

What are some ways we can prevent the deterioration, or weathering of the soil?

Complete the Edible Soil Worksheet found on the KFAC website in the full lesson plan

Suggested Book:

The Soil Neighborhood by Dan Yunk

Full Lesson:

<https://ksagclassroom.org/kslesson/edible/>

Targeted Grade Level:

K-2

Kansas Standards:

NGSS: K-ESS3-3; 1-LS1-1; 2-ESS2-1

Time:

30 minutes

Materials:

6 serving bowls

Clear, plastic 4-6 oz. cups
1 per student

2 1/4 measuring cups

2 tablespoons

2 serving tongs

Vanilla wafer cookies

Mini marshmallows

Cheerios cereal

Chocolate puffs cereal

M&Ms

Gummy worms

Labels for each serving container
(i.e. bedrock, parent material,
subsoil, topsoil, organic matter,
decomposers)

Soil Layers worksheet



Circle of the Earth Bracelet

Overview:

The earth provides us with everything we need to survive. Our resources operate in circles (cycles.) We must take care of our valuable resources. Students will explore the circles of the earth by making a bracelet from colored beads.

Objective:

Students will be able to explain the circles (cycles of water,) living matter, earth, and the sun.

Instructions:

String the colored beads to represent the circles of the Earth. Run the end of the pipe cleaner through the clear bead in the other direction, and the clear bead now becomes the bracelet adjuster.

Go Further:

Read the Kansas Kids Connection Magazines for Water

Suggested Books:

Water Sources Use Conservation by Nancy Carlson

What if Everybody Did That? By Ellen Javernick

Targeted Grade Level:

K-2, 3-5

Kansas Standards:

NGSS: K-ESS2-2, 1-ESS1-1, 2-ESS2-3, 3-ESS2-2, 3-ESS2-2, 4-ESS1-1, 5-ESS2-1

Time:

5-10 minutes

Materials:

1 pipe cleaner

8 small pony beads:

Clear = People

Blue = Water

Green = Plants

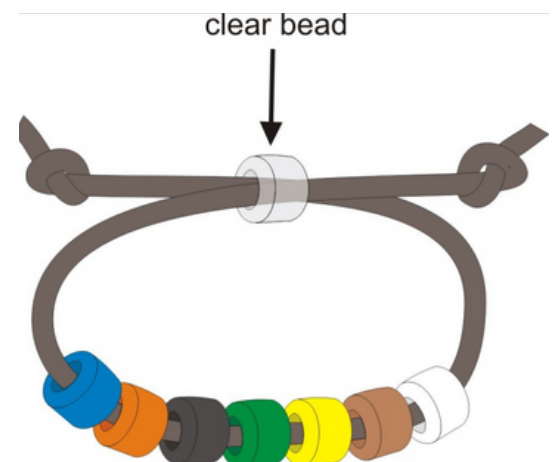
Brown = Soil

Orange = Day

Black = Night

White = Air

Yellow = Sun



Graze like a Cow

Overview:

Students will be able to summarize the cow's role in its ecosystem and the function of a herd.

Objectives:

Students will be able to summarize the cow's role in its ecosystem and explain grass management as a function of protecting the environment and the function of a herd.

Procedure:

1. Divide students into a grass group (90% of students) and a weed group (10% of students).
2. Explain the roles of grass and weeds.
 - Grass students will spread out over the area, standing like a big X, with their arms stretched in a "v" above their heads and their legs spread out. Students should not be touching but need to be close enough that it is difficult to maneuver through their outstretched arms and legs. Instruct grass students that when they are grazed (touched with the play horse/cow), they must put one of their arms down, if they are grazed again, they must put their other arm down, if they are grazed a third time they must stand on one leg and if they are grazed a fourth time, they must sit down (Indian style) because they have been overgrazed to the point of death.
 - Weed students will hold their arms above their heads with their hands clasped. Because they are seedlings, the weeds will take "baby" steps to invade the grass but if they touch a grass student they are not allowed to participate any further. As the activity progresses, have the weed students try to grow (extend their arms and legs like the grass students). The grazing animals do NOT like to graze these particular weeds.
3. Have the weed students try to invade the ungrazed native grassland. (No weed should be able to get through without touching a grass student.)
4. Using the play horse/cow touch each grass student once.
5. Have the weed students try to invade again.
6. Using the play horse/cow touch each grass student once or twice more. At this point all grass students should have both arms to their sides because the grasses have been grazed, but still have enough leafy material and healthy roots to grow back. If grazing is stopped at this point (half of the grass is grazed and half remains) the grassland can recover and grow more.
7. Throw out some candy labeled with sun, fertilizer, or rain. Those students who catch it can eat it and grow as grass would, which would create more opportunities for animals to graze.
8. Have the weed students try to invade again.
9. Using the play cow touch several grass students until they are sitting/dead.
10. Have the weed students try to invade again. The game can end when the weeds take over the grass.

Enrichment Discussion:

1. How does the activity relate to the idea of "take half, leave half?"
2. At what point was it easiest for the weed students to invade?
3. What if animals graze too much?

Go Further:

Read the Kansas Kids Connection Magazines for Beef

Suggested Book:

Amazing Grazing by Cris Peterson

Full Lesson:

<https://ksagclassroom.org/kslesson/graze/>

Targeted Grade Level:

3-5

Kansas Standards:

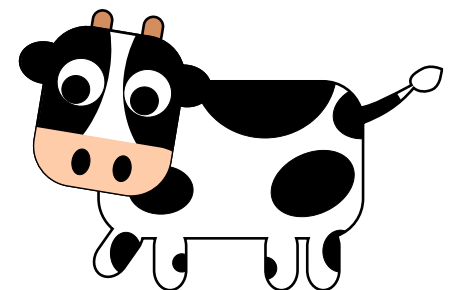
NGSS: 3-LS4-4, 4-LS1-4, 5-LS1-1

Time:

20 minutes

Materials:

Large area on playground OR
large area in classroom
Play horse/cow on a stick (or use
a picture stapled onto a
measuring stick)
Candy pieces labeled sun,
fertilizer, and rain



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Feed Sack Snack

Overview:

Like humans, animals have nutritional requirements to be healthy and active. Students will explore the importance of proper nutrition for animals by making a specifically formulated mock feed ration for pigs. Students will measure ingredients to balance the ration to meet the pig's nutritional requirements. All weights are based on a 9-pound ration.

Objective:

Students will be able to measure dry material to determine the weight and explain how nutrition influences the life cycle.

Procedure:

1. Students each take a "Feed Sack" (plastic bag) and label it with the explanatory feed sack sticker.
2. Students will count out 6 blue M&Ms to represent that pigs drink up to 6 gallons of water per day, depending on their growth stage. Nursery pigs drink much less than a sow (mother pig) nursing piglets.
3. Students will weigh and add 10 grams of cheerios cereal mixed with corn nuts to represent carbohydrates in a pig's diet. Carbohydrates give the pig its daily energy and calorie goals.
4. Students will weigh and add 4 grams of soy nuts to represent the protein in a pig's diet. Protein is required in the diet for maintenance, muscle growth, and development of fetuses for pregnant sows and lactation.
5. Students will count out 10 Nerds and 10 raisins. Nerds represent vitamins and raisins represent minerals. Vitamins and minerals help support specific functions of the body.
6. Students should weigh out 2 grams of white chocolate chips, representing fat. Fat is used to add energy, calories, boost average daily gain and helps with feed conversion.
7. Students use photographs and the pig feed sample to associate the activity with real pig farms and pig diets.
8. Talk with students about the real components of a pig's diet as they create their own Feed Sack to emphasize that animals typically don't eat candy, but they do eat a similar feedstuff to get a specific nutrient.

Go Further:

Read the Kansas Kids Connection Magazines for Pork

Suggested Book:

Kailey's Pig Tales by Dan Yunk

Targeted Grade Level:

3-5

Kansas Standards:

NGSS: 3-LS1-1, 4-LS1-1, 5-LS1-1

Time:

15 minutes

Materials:

Sandwich size Ziploc bags

Scales

Weigh boats

Containers for each feed type

Pig feed sample

Cheerios—represents carbohydrates

Corn nuts—represents carbohydrates

Blue M&Ms—represents water

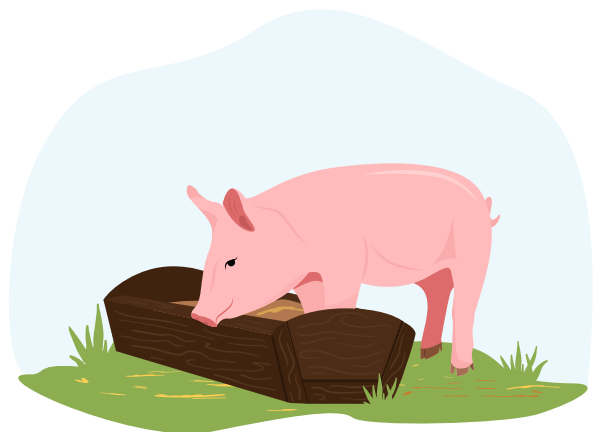
Raisins—represents minerals

Soy nuts—represents protein

Nerds—represents vitamins

White chocolate chips—represents fat

Explanatory feed sticker



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Kansas Crop Monster

Overview:

Cover crops protect soil from the weather while other crops are not growing in it. Students will learn about germination, growth, root structures, and conservation by making a cover crop monster that will grow grass as hair.

Objective:

Students will be able to describe the growth and development of a seed and the factors that affect it and explain how cover crops protect the soil.

Instructions:

1. Place some grass seeds in the toe of the short nylon hose where you want the grass to grow. The toe of the nylon will be the top of the head for your monster.
2. Pack a handful of soil (roughly a cup to 1 1/2 cups) in the nylon on top of the grass seeds. The soil in the nylon will form a ball. Add enough soil so that the ball of soil is slightly larger than the mouth of the cup, so it can sit on top of the cup.
3. Tie a knot in the hose under the ball of soil.
4. Make a face on your monster using rubber bands and jiggle eyes. Make it your own by adding a nose and ears, then placing your eyes in the monster.
5. Place the string of nylon below the knot in a cup with water, ensuring the head is above the lip of the cup. The string of the nylon will absorb the water to feed the grass seeds, which will germinate inside the nylon and then begin to shoot growth through the nylon to form the hair of the monster.
6. Watch the monster's hair grow! Observation can take place over a week and include charting growth.

Suggested Book:

Kailey's Ag Adventures by Dan Yunk

Targeted Grade Level:

3-5

Kansas Standards:

NGSS: 3-LS1-1, 4-LS1-1, 5-LS1

Time:

20 minutes + check-ins

Materials:

Short nylon hose

Condiment cup

Untreated Grass Seed

Potting Soil

Jiggle Eyes

(glued to the end of tack nails)

Small rubber bands



Soybean Lipgloss

Overview:

Soybeans are a leading commodity produced in Kansas, used to make many other products. Students will explore chemical reactions as they learn that crops can be used to create value-added products by making lip gloss from soybean oil.

Objective:

Students will be able to summarize a chemical process, compare and contrast the product's constituent before and after the chemical reaction, and explain how the properties of food influence the final product.

Instructions:

1. Place students into groups of 3. Each group will be making their own batch of lip gloss. Break up the beeswax by placing the block in a large freezer bag and breaking it with a hammer.
 2. Students should measure 14 g (.5 oz.) of beeswax. One person from each group should put their chunk into one beaker.
 3. Put the beaker with the beeswax on the hot plate and turn it on.
 4. With the hot plate on low, add the soybean oil and heat the mixture, stirring occasionally.
 5. When the beeswax is completely melted, turn off the heat.
 6. Optional: For an added scent, add the flavored cooking/essential oil and stir until thoroughly mixed.
 7. Pour the liquid into the small plastic cup.
 8. Allow each student to take his/her lip balm container and observe the changes as the liquid cools.
- Have each group create a venn diagram or T chart. One side should be labeled Before Chemical Reaction and the other side After Chemical Reaction.
9. Optional: Have students give their product a name and create an advertisement for their lip balm. They could also design packaging that will differentiate their product from others on the market.
- Students may choose to test their product with a consumer group.

Go Further:

Read the Kansas Kids Connection Magazines for Pork

Full Lesson:

KFAC lesson plan link

Targeted Grade Level:

6-8

Kansas Standards:

MPS 1-4

Time:

45 minutes

Materials: (per group)

4 oz. small plastic cup

.5 oz Beeswax

3 Tbsp of soybean oil

Stir stick

Hot plate

Hot pad

Glass beaker

.5 mL of cooking flavoring oil



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Careers That Count

Overview:

Kansas Agriculture offers a vast range of career opportunities beyond production. Students will become familiar with many agriculture-related careers and the impact agriculture has on the U.S. population. In researching and talking about chosen careers, students will learn the importance of agriculture-related careers.

Objective:

Students will be able to identify skills needed within agricultural careers, list a variety of careers available in agriculture, and describe the details of one career and its role in society.

Instructions:

1. Distribute KWL Chart to students and have them complete “K” and “W” of the chart regarding careers in agriculture.
2. Split students up into groups of 3-5 and instruct students to pick an agriculture career from the USDA Living Science: Food, Agriculture and Natural Resource Careers cards (www.agriculture.purdue.edu/USDA/Careers).
3. Students will create, from newspaper and duct tape, props that represent the career they have researched. Example: tie, billfold and paper money for an agriculture economist or an agriculture banker; or a soil probe and a shovel for a soil scientist.
4. Students will present the item and the rest of the group will try to guess what profession they chose. Students will then share five facts about that agriculture career.
5. Students will answer conclusion questions and complete the “L” on their KWL Charts.

Full Lesson:

<https://ksagclassroom.org/kslesson/careers/>

Go Further:

Use the Ag Explorer website, where students can dive deeper into different agricultural based careers.

Targeted Grade Level:

6-8

Kansas Standards:

Student identifies personal interests and abilities and relates them to one’s Individual Plan of Study describes how good habits in school relate to career success, explores a variety of traditional and nontraditional occupations related to specific interests recognizes that all occupations are available regardless of diversity (e.g., gender, ethnicity) recognizes the value of all occupations.

Time:

30 minutes + presenting time

Materials:

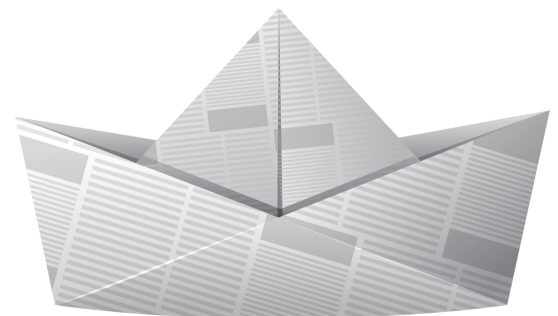
Newspaper

Duct tape

Scissors

USDA Living Science Career Cards

Copies of KWL Chart



Journey 2050 Careers

Overview:

Students will learn about careers in agriculture while playing a game called Journey 2050 and through a careers presentation. Students will explore careers related to agriculture while playing the Journey 2050 game.

Overview:

Students will be able to identify personal interests within agriculture or a related field and discuss how agricultural professionals can impact world food.

Instructions:

1. Display the Career PowerPoint on the board.
2. Divide your students into groups of two to three. Give each group a piece of poster paper and some markers.
3. Slide 2: Assign each group one food item from the grocery list.
4. Inform the students that they will have five minutes to brainstorm all the careers that played a role in producing their assigned food item. Instruct students to draw a career web on their sheet of paper. Their food item should be in the middle, and each career they think of will be connected to create a concept map. (See example on slide 2.)
5. Start a five-minute countdown timer and allow students to go to work.
6. After five minutes is up, have each group count how many careers they came up with.
7. Have each group share their web with the class. (If time is limited, only ask the group with the most careers to share their web with the class.) Discuss with students that there are many careers that play a hand in providing our food supply. Some careers work directly on the farm, but many other jobs related to agriculture do not.

Go Further:

Have students play the full Journey 2050 game and work through all of the other Journey 2050 lesson plans.

Learn more at www.journey2050.com.

Full Lesson & Career Powerpoint:

<https://agclassroom.org/matrix/lesson/588/>

Targeted Grade Level:

7-12

Kansas Standards:

ELA: SL.7.1&2, SL.8.1&2, SL.9-10.6&7, SL.11-12.1&3; KHGSS 5.3

Time:

30 minutes

Materials:

Careers powerpoint

Tablet or computer per student

Paper

Markers



Journey
2050[®]



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KFAC Resources and Opportunities

KFAC is a 501(c)3 non-profit foundation committed to increasing agricultural literacy through connecting agriculture and education in Kansas K-12 classrooms. Through injecting agriculture concepts into the core curriculum, teachers and students develop an appreciation for the agriculture industry. We provide educators with agriculture experiences, credible resources, professional development, standards-based curriculum, and hands-on activities to show students the impact agriculture has on their daily lives by helping them see where their food, fiber, and fuel come from. Funded by grants, sponsorships, and donations, KFAC also supports the agriculture industry by raising awareness and educating others about the value of the industry.

FREE RESOURCES

- Lesson Plans
- Lesson Plan Activity Kits
- Kansas Kids Connection Magazines
- Educators Guides
- Printable Posters
- Virtual Agriland
- Virtual Tours and Games
- Volunteer Resource Book
- Pre-Service Teacher Resource Book
- Kansas Agriculture Information

PROFESSIONAL DEVELOPMENT

- Virtual and in-person workshops
- Pre-Service Teacher trainings
- Volunteer Webinars
- Conference Presentations
- On-demand offerings
- Summer Conference
- National Agriculture in the Classroom Events
- Participation in our partners' offerings

GRANTS & RECOGNITION

- Annually recognize Kansas Teachers through our KFAC Teacher of the Year and Excellence in Teaching Programs
- Give-aways on social media
- A chance to be featured on our social media for your unique ag lessons
- Educator Mini-Grants to support teachers starting agriculture in their classrooms
- Offer scholarships to attend the National Professional Development Event
- Contests throughout the year



Other Helpful Classroom Resources

KFAC is not the only organization with helpful materials. The following organizations have amazing resources to help you integrate agriculture into any environment.

The National Agriculture in the Classroom Organization has a few key resources. The Curriculum Matrix is a collection of lesson plans from across the country that tie to standards, include supporting documents, and have a high-quality agriculture connection. The Ag Classroom E-Store includes many materials and kits that can be used for lessons on the Curriculum Matrix. NAITCO also has grant and award opportunities for classrooms and to attend the National Agriculture in the Classroom conference. Explore more at www.agclassroom.org.

The American Farm Bureau Foundation for Agriculture has many materials for purchase, including high-quality agriculture books, teacher guides, Ag Mags, and more. Explore more at www.agfoundation.org.

Nutrients for Life is an organization that focuses on soil health resources and curriculum. Find materials like student readers, lesson plans, and even flashcards on their website. Explore more at www.nutrientsforlife.org.

Midwest Dairy represents 4,800 dairy farms and 39 million consumers across the midwest. They offer educators information about the dairy industry as well as run a yearly adopt a cow (virtually) event for educators. Explore more at www.midwestdairy.com/

Kansas Farm Bureau's education outreach encompasses children to state legislators through a variety of programs, tours, conferences and media, Kansas Farm Bureau impacts Kansas agriculture daily and improves the perception of agriculture. Explore more at www.kfb.org/education

Kansas Farm Food Connection is a joint effort of ten Kansas ag organizations who are here to be your resource for anything and everything to do with your food and more. These groups serve, and partner with, Kansas ag producers and consumers. And their goal for this site is to give you the scoop on how they help you put fantastic food on your table, fuel in your vehicle, fiber for your clothes and why they grow it the way they do. Explore more at www.kansasfarmfoodconnection.org/

Kansas Corn STEM strives to build conversations about the science and technology involved in producing and utilizing corn, Kansas Corn STEM provides free lessons, supplies and professional development opportunities for teachers K-12. All lessons meet Next Generation Science Standards. Explore more at www.kscorn.com/kansas-corn-stem/

Kansas Agriculture Facts

Kansas is a leader in many agriculture sectors within the United States and the world. Agriculture is the largest economic driver of the Kansas economy, contributing 67 billion dollars annually and 238,000 jobs which is 12% of the workforce. The state's leading agricultural products are wheat, grain sorghum, beef production, dairy products, corn, and hay.

The global population is expected to increase by 2.2 billion by 2050, which means the world's farmers will have to grow about 70% more food than what is now produced. The Kansas agriculture community plays an important role in this growth. Students in classrooms today will be feeding the world in 2050 and as an educator you have a huge impact on their views about the agriculture industry. Here are some quick facts you can integrate into any lessons from this guide to share with your students.

A few facts about Kansas agriculture:

- The average Kansas farmer is 58 years old.
- Approximately 88% of the state's land is under agricultural production.
- Number of Farms: 58,569
- Average Farm Size: 781 acres
- The average US farmer feeds 166 people.
- Cotton is grown in more than 26 Kansas counties.

A few fun agriculture facts:

- Agriculture is the single largest employer in the world.
- An acre of farmland is the size of a football field without the end zones.
- An acre of soybeans can produce 82,368 crayons.
- The cattle population in Kansas (6.5 million) is more than double the human population (2.9 million).
- The average dairy cow produces 7.5 gallons of milk per day.
- 25% of corn is used for ethanol production.
- The average US Farmer only receives 7.8 cents on every dollar spent on food.

For more Kansas agriculture information and county specific data, visit ksagclassroom.org/about/facts/.

For more agriculture fun facts, follow us on social media at [ksagclassroom](http://ksagclassroom.org).

“Through the work of Kansas farmers, ranchers, other agriculture producers, and ag and food processors, in partnership with our Division of Agricultural Marketing, Kansas leads in agriculture.”

-Mike Beam, Kansas Secretary of Agriculture

Agricultural Literacy

What is Agricultural Literacy?

An agriculturally literate person understands and can communicate the source and value of agriculture as it affects our quality of life. (National Agricultural Literacy Logic Model, 2013) AITC programs seek to improve student achievement by applying authentic, agricultural-based content as the context to teach core curriculum concepts in science, social studies, language arts, and nutrition by encouraging teachers to embed agriculture into their classrooms. AITC cultivates an understanding and appreciation of the food and fiber system we rely on daily.

The Importance of Agricultural Literacy

Increased knowledge of agriculture and nutrition allows individuals to make informed personal choices about diet and health. Informed citizens will be able to participate in establishing the policies that will support a competitive agricultural industry in this country and abroad. Agriculture is too important to be taught only to the small percentage of students considering careers in agriculture and pursuing vocational agricultural studies. Agricultural literacy includes understanding historical and current economic, social, and environmental issues that affect all Americans. This understanding includes food and fiber production, processing, and domestic and international marketing knowledge. "Beginning in kindergarten and continuing on through the 12th grade, all students should receive systematic instruction about agriculture"

First Year Teaching Tips

Follow these tips to help you get your school year off to a great start:

1. Use Pinterest to save pictures of classrooms, bulletin boards, and everything you might like to use in your classroom. Organize pins by idea/topic to use as a reference for your classroom. The more ideas you gather, the bigger the idea pool you will have to draw from throughout the year when you might not be feeling as creative.
2. Your first year will be full of experimentation and exploration. Try a variety of teaching techniques with your students to see what works for you and for your students.
3. Getting to know your colleagues can be scary when you're starting at a new school. Don't be afraid to step outside your comfort zone and ask for help. If your school does not provide a mentor, reach out to a veteran teacher to help you navigate the challenges that arise.
4. Reflection is an excellent self-care strategy. Journaling can be a great way to reflect and help you learn from your teaching experiences and plan ahead. Take time for reflection in a journal or find a teacher specific planner with space for notes.
5. Think about the lesson format you have been taught in school or that your supervising teacher used. What did you like about the format? What would you improve? How can you make sure you have enough planned to avoid downtime?
6. How can you make lessons engaging to naturally prevent misbehavior? What are some specific methods you've learned for making learning more active for students?

KFAC is a statewide educational program providing resources, training, and support for schools, educators, and volunteers to spark meaningful connections between classrooms and Kansas agriculture.



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