



4th Grade SAITC Virtual Lessons

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4th Grade Standards and Year Overview



Suggested Month	Standard	Lesson Activity
September	SS.3–5.G.1 Essential Concept and/or Skill: Understand the use of geographic tools to locate and analyze information about people, places, and environments.	<ul style="list-style-type: none"> ● Mapping Iowa Agriculture ● You can conduct the map activity, but we'll also modify it in our video.
October	4-ESS3-1 Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment. <i>This lesson will also support writing standards related to text types and purposes (persuasion and explanation).</i>	<ul style="list-style-type: none"> ● Using a graphic organizer, students will give an opinion on the use of biofuels, supported by three reasons. ● This can be extended to write an explanation or persuasion piece.
November	4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	<ul style="list-style-type: none"> ● Parts of an egg diagram ● It's optional to use fresh eggs and look at the parts on your own, too!
December	S.S.4.26 Explain how Iowa's agriculture has changed over time.	<ul style="list-style-type: none"> ● Students get background on events and technology before writing about them.
January	SS.4.25. Analyze the impact of technological changes in Iowa, across time and place. SS.4.26. Explain how Iowa's agriculture has changed over time.	<ul style="list-style-type: none"> ● After background on raising hogs, we'll focus on today's practices. ● Students play "Truth or Hogwash?" ● It's optional to extend with the STEM Challenge to build pig barns, but they did this in 2nd grade.
February	4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior,	<ul style="list-style-type: none"> ● Use Venn Diagram to compare and contrast cattle (ruminants) to

	and reproduction.	<p>humans (monogastrics).</p> <ul style="list-style-type: none"> ● We'll look at reasons cattle diets are so different from our own!
March	4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	<ul style="list-style-type: none"> ● Play Sheep Jeopardy (online or use our template for your own version)
April	<p>4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.</p> <p>4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.</p>	<ul style="list-style-type: none"> ● Look at the life cycle of soybeans, labeling the phases, and identifying what the plants need to grow. ● You can extend this by germinating or growing soybeans.

Materials and Modifications

September: Mapping Iowa Agriculture

Traditional	Modification Ideas
<p>We pair students, and each group needs a map. Commodities are divided amongst groups. It works well to have a “teacher map,” too.</p> <ul style="list-style-type: none">• Iowa Map (the DOT has these, and often they don’t charge for them!)• Commodity clue cards• Commodity image cards• Worksheet (1/student)	<p>We will show the map activity, and explain each commodity across Iowa in our video, just like we have in your classes in the past.</p> <p>If you want to do the map activity, there will be a cue to pause the video. You can resume the video for our explanation after your class locates items on the map.</p>

October: Iowa and Biofuels

Previously, we conducted the disappearing packing peanut experiment to demonstrate the biodegradable property of corn. Since your class saw this as second-graders, we’ll instead focus on ethanol and biodiesel. We’ll introduce a graphic organizer that can be used to write an explanation or persuasion piece about the use of biofuels.

November: Egg Production and Parts

We haven’t previously shared an egg lesson with your class, but we’re excited to do so as the top egg-producing state in the US! Iowa produces roughly 16 billion eggs each year. In the video, we’ll share the parts of an egg, using two eggs: one with its shell removed and another fresh egg. You are welcome to do the same, but it isn't necessary. **To remove an egg’s shell, soak the egg in vinegar for 5-7 days. It works best if the egg is submerged by at least an inch of vinegar.**

December: History of Iowa Agriculture

This lesson is the same as last year’s. We’ll discuss the change of agriculture over time, showing pictures, and categorizing farmers into four categories. Students are then asked to write a “post” as each of those farmers. You’re welcome to be creative with this, though, and we hope our video gives your class a good basis of knowledge.

January: Pigs

Traditional	Modification Ideas
<ul style="list-style-type: none">• Raw Spaghetti Noodles (10/student)• Mini Marshmallows (5/student)• STEM Challenge Worksheet (1/student)• Small pig (we used erasers from the Iowa Pork Producers https://www.iowapork.org/)	<p>Your students completed the same STEM Challenge to build a barn in 2nd grade. It's an option to keep this if it's helpful to your curriculum, but we have an alternate lesson available, too: <i>Pigs - Truth or Hogwash?</i> For the new lesson, you need:</p> <ul style="list-style-type: none">• History of Raising Pigs (1/student/group)• Truth or Hogwash Cards (1/class/group)• Truth or Hogwash Worksheet (1/student)

February: The Science of Cattle

Previously, we used a Venn Diagram to compare and contrast both beef and dairy cattle. The same activity was used when your students were in 2nd grade. The new lesson focuses on the ruminant system of all cattle; a Venn Diagram is still used to compare and contrast ruminants (with four compartments in their stomachs) to monogastrics, like humans.

March: Sheep Jeopardy

We've created an online version of the same Jeopardy game we played previously! The link is in the lesson materials; however, you'll also find what you need to play the game on your own if you choose not to use the online version.

April: Soybean Life Cycle

Traditional - Germinating Soybeans	Modification Ideas
<ul style="list-style-type: none">• Soybean life cycle worksheet (1/student)• Soybean seed (1 per student)• Jewelry bag or Ziplock (1 per student)• Water source<ul style="list-style-type: none">○ We used 7 different colored orbeez to represent different things a plant needs to grow.○ You can use a soaked cotton ball.• Heat source<ul style="list-style-type: none">○ Pocket○ Yarn to create a necklace○ Masking tape to hang in windows	<p>We will explain the phases of the soybean's life cycle, and you'll only need the printed worksheet to fill in.</p> <p>The game-cards for "I Have, Who Has: Soybean Edition" are also available for your class to learn more about products we get from soybeans.</p>

September: Mapping IA Agriculture

4th Grade

Please complete a short survey once you've shared this lesson with your class!

<https://forms.gle/i6WPiq6hz1hCuNq36>

This lesson is taught completely in the YouTube video. If you're able, please print/copy the highlighted materials, and add any materials you'd like to include.

<p>Standards</p>	<p>SS.3–5.G.1 Essential Concept and/or Skill: Understand the use of geographic tools to locate and analyze information about people, places, and environments.</p>
<p>Lesson Targets</p>	<ul style="list-style-type: none"> ● I can identify products I use everyday that come from Iowa agriculture. ● I can locate places in Iowa, using a map, key, and legend. ● I can explain how agriculture is connected to my life.
<p>Materials</p>	<p>We will show the map activity, and explain each commodity across Iowa in our video, just like we have in your classes in the past. If you want students to do it, we'll cue you to pause the video, and you can resume for our explanations.</p> <ul style="list-style-type: none"> ● Iowa Map (1/group) ● Commodity Clue Cards ● Commodity Image Cards ● Student Worksheet (1/student)
<p>Lesson Steps</p>	<ol style="list-style-type: none"> 1. We see farms all across Iowa, but did you know that everything you eat starts on a farm somewhere in the world? Iowa is best-known for our corn, soybeans, and livestock, and throughout the year, we'll talk each month about something our farmers help produce. Today, we're going to talk about some things our farmers are busy producing, and I guarantee at least one of them will surprise you! 2. Introduce map activity (PAUSE VIDEO AFTER IF YOU'RE COMPLETING) <ol style="list-style-type: none"> a. You and your group will get a clue card (or multiple) b. Once you know what's being described, you'll exchange it for a picture of what's being described. c. On the back of your card is a coordinate (explain how to use) d. You'll locate the city, then add it to a large map 3. Once all items are on the map, show to the whole class and explain each item (WE'LL DO THIS IN THE VIDEO) 4. Have students add their own items to their booklet, as well as three others they have used that day, or use regularly (item and location).

How is the standard being checked?	Students are using maps correctly, and they're able to explain something they use daily and where it originated in Iowa.
Closure	Ask which item surprised them! I guarantee they didn't know them all! :)
Extension for Teachers	Assign items that are human or capital resources (i.e. the tractors from John Deere are capital resources people graduating from Iowa State or working at Pioneer are human resources). Have students repeat the map activity, and once you've completed the activity, have the students sort the cards into human, natural, and capital resources.
Survey	https://forms.gle/i6WPiq6hz1hCuNq36

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<https://forms.gle/i6WPiq6hz1hCuNq36>

This lesson is taught completely in the YouTube video. If you're able, please print/copy the highlighted materials, and add any materials you'd like to include.

<p>Standards</p>	<p>4-ESS3-1 (Earth and Human Activity) Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.</p> <p><i>This lesson will also support writing standards related to text types and purposes (persuasion and explanation).</i></p>
<p>Lesson Target</p>	<p>Students will be able to explain that biofuels are derived from Iowa crops, and they have a less-adverse impact on the environment than petroleum-based fuels.</p>
<p>Materials</p>	<ul style="list-style-type: none"> ● Iowa and Biofuels Graphic Organizer - 1/student ● Writing paper (optional to extend) - 1/student
<p>Lesson Steps</p>	<ol style="list-style-type: none"> 1. Review/introduce types of corn, focusing on field corn. Iowa produces more than any other state; 99% of our corn is field corn. <ol style="list-style-type: none"> a. Four parts: protein, oil, starch, fiber b. Each part can be used for different purposes c. Livestock eat $\frac{1}{3}$ of Iowa's corn d. 4,000 corn-based products e. #1 producer of ethanol (4.1 billion gallons annually) 2. Review/introduce soybeans; Iowa is #2 nationally for soybean production. <ol style="list-style-type: none"> a. Two parts: soybean oil and soybean meal b. Meal is eaten by livestock c. Oil is used in many products, including biodiesel 3. Introduce graphic organizer; explain adding notes throughout slideshow 4. Slideshow explaining biofuels (Google Slides) <p>https://docs.google.com/presentation/d/1GzEvuM-thcGR4Phv-hBXKd4dKRBeT1hO8QYW0s6TRE8/edit?usp=sharing</p> <ol style="list-style-type: none"> a. Renewable vs. Nonrenewable resources b. Cleaner Air c. Ethanol from corn starch d. DDGS (livestock feed) e. Biodiesel from soybean oil

	5. Back to graphic organizer: opinion, 3 reasons, conclusion
How is the standard being checked?	Students will have three reasons that support the use of biofuels for its renewable and clean-air properties.
Closure/Check	Students' writing pieces will reflect what they've learned about biofuels and their use as a means to better environmental practices.
Survey	https://forms.gle/i6WPiq6hz1hCuNq36

November: Producing Eggs/Parts of an Egg

4th Grade

Please complete a short survey once you've shared this lesson with your class!

<https://forms.gle/i6WPiq6hz1hCuNq36>

This lesson is taught completely in the YouTube video. If you're able, please print/copy the highlighted materials, and add any materials you'd like to include.

Standards	4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
Lesson Target	Students can identify the parts of an egg and explain their functions in chick production.
Materials	<p>You will only need either the egg worksheet or workbook; however, you can use fresh eggs to examine the parts of an egg more closely.</p> <ul style="list-style-type: none"> ● Parts of an Egg Worksheet (diagram) - 1/student OR ● Parts of an Egg Book - 1/student ● Scissors - 1/student ● Glue - 1/student ● Fresh eggs (<i>optional</i>) ● Clear container (<i>optional</i>) - 1/egg ● Egg without shell (<i>optional</i>) <ul style="list-style-type: none"> ○ Glass container ○ Fresh egg ○ Vinegar (about 3 cups)
Lesson Steps	<ol style="list-style-type: none"> 1. Iowa produces more eggs than any other state! Each year, about 16 billion eggs are produced in Iowa. Today we'll look at how eggs are produced, and what is found inside an egg. 2. Read "My Family Farm: Eggs" 3. Look at "Facts about Chickens" PowerPoint 4. Using a fresh egg, crack it into a clear container to examine the parts: <ol style="list-style-type: none"> a. Shell: The shell has more than 7,000 tiny pores to allow air in b. Membrane: this keeps bacteria out, and slows evaporation from the egg c. Air Cell: located at the large end of the egg, this holds oxygen for the chick to breathe d. Albumen: also called the white, this cushions the yolk, and is a source of protein and water for the embryo e. Yolk: provides food for the chick; it's full of carbs, fats, protein,

	<p>vitamins, and minerals</p> <p>f. Chalazae: hold the yolk in place</p> <p>g. Germinal disc: passes genetic material from hen to chick</p> <p>5. Have students complete diagram</p> <p>6. Explain parts to class or partner for standard check</p>
How is the standard being checked?	Students correctly label the diagram, and they can explain how the parts of the egg support the growth of chicks.
Closure/Check	Students share the function of the egg parts with another student or the class.
Extensions for Teachers	<p>We did a distance learning video on this in the spring; in the first of the two-part videos, we did an experiment to remove the shell of our egg. You can find the experiment and data-tracking sheet for that on our website: www.aitcsiouxland.com/digital-lessons.</p> <p>To take this even further, you could hatch chicks in your classroom!</p>
Survey	https://forms.gle/i6WPiq6hz1hCuNq36

December: The History of Iowa Agriculture

4th Grade

Please complete a short survey once you've shared this lesson with your class!

<https://forms.gle/i6WPiq6hz1hCuNq36>

This lesson is taught completely in the YouTube video. If you're able, please print/copy the highlighted materials, and add any materials you'd like to include.

Standards	S.S.4.26 Explain how Iowa's agriculture has changed over time.
Lesson Target	Students can identify technologies and tools that make farming different today than in the past.
Materials	<ul style="list-style-type: none"> • "Twitter" Worksheet (1 per student)
Lesson Steps	<ol style="list-style-type: none"> 1. Ask students to describe what comes to mind when they hear "agriculture." <i>Think about the tools used, what's grown or cared for, and words that describe the work farmers do.</i> <ol style="list-style-type: none"> a. Create a web, with the word "agriculture" in the center, and student words around it. 2. Explain that while we think of agriculture like that today, not everything on our web was always available to farmers in the past. <ol style="list-style-type: none"> a. Ask: How has farming changed? <i>Technology, equipment, etc.</i> 3. Show the PowerPoint to the class, explaining development of farming <ol style="list-style-type: none"> a. Keep track of groups of farmers throughout history: Native Americans, Pioneers, those learning to use tractors, modern farmers 4. Pass out the worksheet, and explain that they'll need to write a tweet from each farmer's perspective at the four points in history. <ol style="list-style-type: none"> a. Tweets must be school-appropriate. b. Tweets need to be respectful of the person/event, as well as respectful to share with classmates. c. Tweets should show something they learned about the history of agriculture. (Make sure we can tell which time-period you're from from the information in your tweet. Example (pioneer): <i>My horse broke its leg, so I can't continue plowing until it's better.</i>) 5. Share tweets as a class, having students guess which time-period the tweets are from, and reiterate that fewer farmers feed more people today because of technology and advancement in agriculture. 6. Going back to the web, ask students to remove anything that would only be applicable to today's farmers (like tractors). Point out that even though we have more technology now, farmers have always had the same job of caring for the land and livestock to provide food!

How is the standard being checked?	Students can identify factors in farming that are different today than they were in the past. This is shown by the information they present in their tweets/writing.
Closure/Check	Students share with a partner to identify changes.
Extensions for Teachers	<ul style="list-style-type: none"> ● Have students research a famous lowan or technology we use today. ● Create a gallery that displays how farming has changed.
Survey	https://forms.gle/i6WPiq6hz1hCuNq36

January: Pigs - Truth or Hogwash?

4th Grade

Please complete a short survey once you've shared this lesson with your class!

<https://forms.gle/i6WPiq6hz1hCuNq36>

This lesson is taught completely in the YouTube video. If you're able, please print/copy the highlighted materials, and add any materials you'd like to include.

<p>Standards</p>	<p>SS.4.25. Analyze the impact of technological changes in Iowa, across time and place. SS.4.26. Explain how Iowa's agriculture has changed over time.</p>
<p>Lesson Target</p>	<p>Students can identify truths about how pigs are raised today for health reasons versus older practices.</p>
<p>Materials</p>	<p>In the past, students learned about the importance of pigs living inside, then completed a STEM Challenge to build their own barn. Your students also did that in 2nd grade. You're welcome to do that activity again with the materials below, add it alongside our new lesson plan, or choose which activity best for your class!</p> <p>NEW: TRUTH OR HOGWASH</p> <ul style="list-style-type: none"> - History of Raising Pigs (1/student/group) - Worksheet (1/student) - Truth or hogwash card set (1/class or group) <p>STEM CHALLENGE</p> <ul style="list-style-type: none"> - <i>The History of Raising Pigs information would be beneficial here, too!</i> - 10 raw spaghetti noodles (per student) - 5 mini marshmallows (per student) - 1 worksheet (per student) - 1 pig eraser or small item/picture of a pig to serve as a scale
<p>Lesson Steps</p>	<ol style="list-style-type: none"> 1. Brainstorm what students know about pigs: where do they live, what do they eat, what do they provide? Create a list. 2. Have students read or listen to the "History of Raising Pigs." 3. Looking at the list, eliminate or mark misconceptions 4. Watch "Field Trip to an Ohio Pig Farm" on YouTube 5. Reinforce the word hogwash and come up with some examples 6. Pass out Truth or Hogwash cards to the class, or have students work in groups (there are 13 cards) <ol style="list-style-type: none"> a. Students read a card aloud, and the class/group votes on whether it is truth or hogwash b. As each card is read, address the truth on the back of the card 7. Pass out the worksheet, having students record 3 truths about pigs, and

	2 ideas that are hogwash.
How is the standard being checked?	Students can explain differences in the history of raising pigs (fed slop, living outdoors) compared to today's common practices of living in controlled barns and being fed a precise ration.
Closure/Check	Students correctly identify truths and "hogwash" on their final work.
Extensions for Teachers	STEM Challenge: students create a structure similar to those pigs are raised in today.
Survey	https://forms.gle/i6WPiq6hz1hCuNq36

February: The Science of Cattle

4th Grade

Please complete a short survey once you've shared this lesson with your class!

<https://forms.gle/i6WPiq6hz1hCuNg36>

This lesson is taught completely in the YouTube video. If you're able, please print/copy the highlighted materials, and add any materials you'd like to include.

Standards	4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
Lesson Target	Students can explain that as ruminants, cattle have an internal system that allows them to survive in pastures by consuming grass, unlike humans (monogastrics).
Materials	<ul style="list-style-type: none"> The Science of Cattle Worksheet (1/student)
Lesson Steps	<ol style="list-style-type: none"> Cattle are raised in all 50 United States, and every one of Iowa's 99 counties raises cattle. 1.2 billion acres, or about half of the US is considered "grazing land." 90% of that grazing land is covered in grass, which people can't eat or digest. <ol style="list-style-type: none"> Cattle benefit pastures or grazing land Grass is planted to prevent erosion When they walk on it, they keep the soil loose which allows oxygen to enter the soil Cattle manure is a natural fertilizer to help grass continue growing Farmers can cut the grass and hay, and dry it before putting it into round bales for storage. When cattle eat grass, field corn, or hay, their bodies convert it into energy that produces beef and milk that we eat. <ol style="list-style-type: none"> About $\frac{1}{3}$ of Iowa's corn is fed to cattle. The corn can be ground, or chopped for silage. Cattle eat products that humans can't eat because they are ruminants; they have four compartments in their stomach. We only have one! <ol style="list-style-type: none"> Rumen Reticulum Omasum Abomasum Humans have one compartment, or a "simple stomach." <ol style="list-style-type: none"> Our bodies don't make the chemicals or microbes our stomach needs to digest cellulose, which is the main component of most

	<p>roughages, like grass, hay, and field corn.</p> <p>5. Using your Venn Diagram, compare and contrast what ruminants can eat/drink, what humans can eat/drink, and what things they can both eat/drink</p> <ol style="list-style-type: none"> a. Cattle: hay, alfalfa, grass b. Humans: pineapple, sweet corn, cheeseburgers, ice cream, bananas, apples c. Both: field corn, soybeans, milk, water <ol style="list-style-type: none"> i. We eat field corn, but it's been processed, or broken into starch, oil, and meal; it's found in candy, tortilla chips, and cooking oils, as well as many other foods. ii. Calves drink their mothers' milk; humans also drink cow's milk. iii. Cattle can eat soybean meal, while humans eat edamame, and soybean oil in many other products (again, it's usually processed).
How is the standard being checked?	Students can explain that ruminants can digest grass (natural resource), and this develops muscle and/or milk that consumers buy.
Closure/Check	Students can identify goods we buy as a result of natural resource consumption by cattle.
Extensions for Teachers	<ul style="list-style-type: none"> ● Cherokee/O'Brien County Google Expeditions with Dairy expedition ● Dairy field trips (contact WIDA or SAITC for information) ● Write a compare/contrast paragraph about beef and dairy cattle.
Survey	https://forms.gle/i6WPiq6hz1hCuNq36

March: Sheep Production

4th Grade

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<https://forms.gle/i6WPiq6hz1hCuNq36>

This lesson is taught completely in the YouTube video. If you're able, please print/copy the highlighted materials, and add any materials you'd like to include.

<p>Standards</p>	<p>4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.</p> <p><i>Their instinct to be part of a flock influences their individual behavior and survival, as they depend on one another or other leading animals for protection and survival.</i></p>
<p>Lesson Targets</p>	<p>Students can explain sheep's "herd mentality," and its role in their behaviors and need for protection.</p>
<p>Materials</p>	<p>We've created an online version of our Jeopardy game, and the link is ready for you! If you choose to play on your own, or just want the questions, that's all available in the lesson materials below, too.</p> <ul style="list-style-type: none"> ● Jeopardy (1 for class) – LINK ON NEXT PAGE ● Sheep Information Page - 1/student or group ● Sheep Worksheet to fill in (provides background for game) - 1/student
<p>Lesson Steps</p>	<ol style="list-style-type: none"> 1. Connect cattle and sheep as ruminants. Recall ruminant system and the ability to digest things humans cannot. 2. Have students fill in what they know about sheep. 3. Pass out the article of extra information, having them complete what was missing on their worksheets. 4. Go over each section, reminding students they'll need the information to play Jeopardy! 5. Play Jeopardy, but make sure students put away their worksheets and information first!
<p>How is the standard being checked?</p>	<p>Students can explain what it means to have a herd mentality, and how that affects sheep behavior and care for them.</p>
<p>Additional Resources</p>	<ul style="list-style-type: none"> ● Iowa Sheep Association: www.iowasheep.com ● www.sheep101.info (this is surprisingly helpful and valid!) ● While Iowa actually has more goats than sheep, we rank first in the number of sheep producers. We're tied with Oregon for 9th place in overall sheep and lamb production (2019).

4th Grade Sheep Jeopardy

Hopefully this link will take you to an interactive Jeopardy we've created!

If you need the password, it's **sheep.**

This website will allow you to create teams to keep score if you wish.

https://jeopardylabs.com/play/siouxland-ag-in-the-classroom-sheep#.Xt_jLh0EcOQ.email

If you struggle with the link, or you'd rather play this another way, here are the questions:

	Sheep Products	Raising Sheep	Sheep Diet
10	What do we call the meat that comes from sheep? lamb or mutton	Sheep live in a group. What is the group called? flock	What do sheep eat? corn, hay, grass
20	What fiber do sheep produce? Hint: we can wear it. wool	What is a female sheep called? ewe	When sheep eat in a pasture as a flock, what is it called? grazing
30	What can be made from wool? sweaters, socks, blankets, yarn, lanolin	What does it mean to have a "herd mentality"? Sheep follow a leader, they stay together, and they feel safe in their flock.	How many compartments are in a sheep's stomach? 4
40	What is the meat from a sheep called when it's from an older sheep? mutton	How can sheep help prevent forest fires? They can eat brush, keeping it from burning.	What do you call an animal with four compartments in its stomach? ruminant
50	How do farmers remove the wool from sheep? Sheep are shorn (once a year, usually in the spring).	Besides a farmer, who sometimes guards sheep? guard dogs, llamas, donkeys	Sheep "chew their food twice." What is the second chewing called? cud

April: Soybean Life Cycle & Growth

4th Grade

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<https://forms.gle/i6WPiq6hz1hCuNg36>

This lesson is taught completely in the YouTube video. If you're able, please print/copy the highlighted materials, and add any materials you'd like to include.

<p>Standards</p>	<p>4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.</p> <p>4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.</p>
<p>Lesson Target</p>	<p>Students can explain what soybean plants require for growth, and the stages of the plant's life cycle.</p>
<p>Materials</p>	<p>In the past, we have used orbeez to provide water to a soybean seed, and when they're kept in pockets or hung in a window, the heat will germinate the soybean. Soybeans grow very easily, and you can use a wet cotton ball instead of orbeez if you're wanting to only germinate them. You can teach this lesson without any soybeans, though!</p> <p>Modified</p> <ul style="list-style-type: none"> ● Modified Soybean Life Cycle Worksheet (1/student) ● Soybean Background Information (1/student/group/class) ● Soybean "I Have...Who Has?" game (1 set/class) ● Soybean Plant Needs (this can be printed or used for your reference) <p>Traditional/Germination or Growth</p> <ul style="list-style-type: none"> ● Traditional Soybean Life Cycle Worksheet (1/student) ● Soybean seed (1/student) ● Jewelry bag or Ziplock (1/student) ● Soaked Orbeez (we used 7 varied colors/student); wet cotton ball ● <i>To grow beans, use soil and a small cup; water every couple days, and keep near a window.</i> ● <i>To germinate seeds, use the orbeez or a wet cotton ball in a small plastic bag, and keep it near heat (pocket, around the neck with a string, or hung in a window with masking tape). The heat will germinate the seed, and it can be transplanted.</i>
<p>Lesson Steps</p>	<ol style="list-style-type: none"> 1. Show edamame picture and a mature soybean plant <ol style="list-style-type: none"> a. <i>What are these, and how are these pictures different?</i> b. <i>Have you eaten a soybean?</i> c. <i>What is needed to grow a soybean?</i>

	<ol style="list-style-type: none"> 2. Using the plant needs cards, talk through the different necessities to germinate, and how they're used. Add information to the worksheet. 3. Label the parts of the soybean life cycle. 4. Read about soybean production for background information for the game. (aloud, pairs, or individual) 5. Play "I Have...Who Has?" game with soybean production information.
How is the standard being checked?	Students can explain the need for heat and energy to continue germination and the life cycle.
Closure/Check	In the game, students can recall the information they've learned about energy and nutrients in relation to soybean production.
Extensions for Teachers	Keep track of your plant's data as they get energy (window or pockets).
Survey	https://forms.gle/i6WPiq6hz1hCuNq36