“Solutions-Oriented Learning” Storyline

5-Food Waste

Storyline introduction and overview:

While food waste is not typically seen as contributing to greenhouse gas emissions, it is a major contributor. Reducing food waste is the 3rd most beneficial drawdown solution. Wasted food, and the resources to produce that food, are responsible for approximately 8% of global greenhouse gas emissions. When individuals and groups reduce food waste, it has a huge impact on reducing greenhouse gas emissions.

Food waste awareness is applicable to every person and community. In this storyline, students conduct a “food waste audit”. Each participating class of students collects, sorts and measures their food waste for one day at lunch. Students discuss the local and global causes and effects of food waste to the environment. Students will also learn the cultural connections around food waste from experts or elders from the local Indian tribe, and inquire how different agencies in the community deal with food waste (e.g, grocery store, food bank, city). Suggestion for how students can present their findings and create an action plan are also included.

Food Waste NGSS Learning Progression**:** The 5th grade storyline is part of a larger learning progression that includes students mastering standards pre-K to 12th grade. Take a look at how the 5th grade performance expectations fit in a continuum of learning for your students.

Placemaking: Food waste awareness is applicable to every person and community. In this storyline, students will conduct a “food waste audit”, or collect, document and analyze food wasted during one lunch meal at school.	**Anchoring phenomena:** Each day, I see a lot of the food that is served at my school end up in the waste containers in the cafeteria.	**Drawdown:** Food Waste
Indigenous and other relevant cultural connections: In the Native worldview, food is a gift, not a commodity. The work of gathering and preparing food is a well planned journey throughout the course of the seasonal cycle that connects us to the communities that not only sustain us, but teach us how to live in the world. Waste is known as a disrespect of the lives that sustain us and is strictly avoided. Since time immemorial, our local foods, our First Foods, have been well-managed using defined and practiced management rules.	**NGSS PEs (progress towards):** PE: 5-ESS3-1: Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and the environment PE: 3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	

NGSS PEs:

“Solutions-Oriented Learning” Storyline

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5-ESS3-1: Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and the environment

3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

Science & Engineering Practice (SEP)	Disciplinary Core Idea (DCI)	Cross Cutting Concept (CCC)
Obtaining, Evaluating, and Communicating Information Obtaining, evaluating, and communicating information in 3–5 builds on K–2 experiences and progresses to evaluating the merit and accuracy of ideas and methods. • Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem. (5-ESS3-1)	**ESS3.C: Human Impacts on Earth Systems** • Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth’s resources and environments. (5-ESS3-1)	.**Systems and System Models** • A system can be described in terms of its components and their interactions. (5-ESS3-1) ***Connections to Nature of Science*** **Science Addresses Questions About the Natural and Material World.** • Science findings are limited to questions that can be answered with empirical evidence. (5-ESS3-1)
Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. • Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem.	**ETS1.B: Developing Possible Solutions** • Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. • At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs.	**Influence of Science, Engineering, and Technology on Society and the Natural World** • Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.

Teacher Background on Food Waste:
Food waste was not a significant problem in the northwest before the 1850s. Traditional values around food for the Coast Salish people include “Food is the center of culture; Honor the food chain; Eat with the seasons; Eat a variety of foods”, according to Traditional Native Foods of the Puget Sound (Burke museum in Seattle). In addition to not living by these values, the non-Indian inhabitants of the Pacific Northwest “rapidly altered ecosystems and restricted access to lands and waters, making it increasingly hard for Coast Salish people to collect traditional foods,” interrupting the Coast Salish peoples’ sustainable way of living. Not even two centuries later, “more food

reached landfills and combustion facilities than any other single material in our everyday trash,” according to United States 2030 Food Loss and Waste Reduction Goal.

According to the Food and Agriculture Organization of the United Nations, “one-third of food produced for human consumption is lost or wasted globally, which amounts to 1.3 billion tons per year. Food is lost or wasted throughout the supply chain, from initial agricultural production down to final household consumption. Food losses represent a waste of resources used in production such as land, water, energy and inputs, increasing the green gas emissions in vain.” Also, “the decrease maybe be accidental or intentional, but ultimately leads to less food available for all.”

A Food Waste in a School Nutrition Program After Implementation of New Lunch Program Guidelines, a Montana State University study to assess the amount of food waste by kindergarten and pre kindergarten students, found that over 45% of food and beverages served were wasted during one full school week, and “the greatest amount of food waste was generated from vegetables, main entree, and milk respectively.”

Strategies and opportunities to include community partners:

After students see the quantity of food waste they produce as a class/grade/school, they might benefit from seeing the impact food waste has outside of their school community and what some people are doing to reduce food waste in their community. This could come before or after the students have generated and perhaps implemented their own solutions/strategies at the classroom/grade/school level. If you know someone from a local grocery store, crop farm, tribal community, or restaurant, you could invite them to come in to share their experiences around food waste and to answer student questions. If you don’t personally know someone in those industries, consider “cold calling” someone to ask if they could take the time to visit your classroom, either in person or via a video conferencing service like Skype. In addition to learning more about food waste, your students will benefit from seeing and hearing ‘real life adults’ working and solving problems in their community. This experience could spark an interest in your students that leads them to their future careers.

Learning Sessions

Materials List:

Learning session	Materials
1.	The Extraordinary Life and Times of Strawberry

2.	Science notebooks or journals for each student
3.	Copies of pre-assessment for each student (printed rubric for each student is optional)
4.	The Extraordinary Life and Times of Strawberry
5.	• Six 5 gallon LABELED buckets (labeled, see details in learning session) per class of students. • Trash bags to line the buckets making for easier cleanup. • One large trash can borrowed from custodial staff
6.	• Buckets with food and liquid waste and one empty bucket for weighing/modeling • A luggage scale, if possible. If not, a bathroom scale can work but is more difficult for this purpose. • Gloves, aprons, eye projection for all students who will come in contact with the waste. • Clipboards, paper and pencils for students who will capture data during the sort. • Blue tarps, contractor bags, or plastic drop cloth /visqueen - large enough to spread the solid waste out onto • Large trash can (from the cafeteria) to dispose of solid waste after it is sorted and counted.

7.	• Food Waste Calculator
	• The Carbon Cycle Game (details on the link)
	  ○ 7 Dice
	  ○ 7 Station Signs
	  ○ 7 Station Movement Directions
	  ○ Data record sheets for each student
	• The Greenhouse Effect
	• Greenhouse Effect Demo
	  ○ 2 clear 2-liter soda bottles (remove the label, bottle cap, and rinse it out)
	  ○ Water
	  ○ Duct tape (alternative: clay)
	  ○ Scissors
	  ○ 2 glass thermometers (alternative: digital thermometer probes)

	○ 2-4 seltzer tablets ○ Tabletop lamp (at least 100W bulb) ○ Timer
8.	Video options dependent on your region and local Tribal Nation
9.	Video - Grass Roots
10.	Dependent on teacher choice- see learning session for suggestions
11.	Copies of post-assessment for each student (printed rubric for each student is optional)

1.	**Grounding Native Ways of Knowing:**	Estimated time: 30 minutes

Local Native communities hold important traditional ecological knowledge grounded in stewardship of the land and care for the gifts the land provides for life. In the Native worldview, food is a gift, not a commodity. The work of gathering and preparing food is a well planned journey throughout the course of the seasonal cycle that connects us to the communities that not only sustain us, but teach us how to live in the world. Waste is known as a disrespect of the lives that sustain us and is strictly avoided. Since time immemorial, our local foods, our First Foods, have been well-managed using defined and practiced management rules. Attunement to the landscape and its connected systems, attunement to seasonal cycles and the availability of plants and animals is central to this stewardship. Not taking more than you need is common traditional ecological knowledge. In order to respect the life that was taken, it is important to know how to properly gather, prepare and store foods so that none is wasted.

Additionally, in depth ecological and processing knowledge is required so that we only gather what we can use, have the time to process, and can take care of it properly. If someone gathers too much or does not know how long it takes to clean/dry/cook/chop/freeze/store/etc., they will end up wasting that life and their work. Thus, careful planning and preparation takes place to avoid waste.

In addition to not taking too much, we should take and use things in ways that are respectful to the life taken, and in a way that promotes future growth/life, which is very different for each plant and animal. Traditional teachings lead us to gather/hunt/fish in ways that have little negative impact or, more often, have an impact that promotes the life of what we're taking. For example, careful coppicing/cutting back of some trees and shrubs results in strong growth and greater production from that living thing, and the traditional methods of digging camas bulbs aerates the soil and promotes future growth. In addition to consuming thoughtfully, the

	indigenous perspective on "waste" in general is different from most non-indigenous perspectives. For example, in TEK, we are expected to use all parts of what we take from the earth and use it in the best way. Traditional indigenous food practices and land management conserve & promote biodiversity, maintain a range of ecosystem services, and safeguard rich cultures and traditional ways of life that promote healthy communities. Story ideas from Cinnamon Bear - Work with your local tribe to learn locally-relevant stories - Story of Camas - teaches how camas came into the world - food is a gift - Smart Berries - Wise coyote tricks badger into eating elk droppings. Pay attention to what you put into your body. Summary of TEK for food waste: 1. Food is a gift 2. Take only what you need 3. Use as much of the food as you possibly can, even food you think of as waste 4. Give back through compost Watch The Extraordinary Life and Times of Strawberry (2 minutes)

2.	**Examine phenomena: Each day, I see a lot of the food that is served at my school end up in the waste containers in the cafeteria.**	Estimated time: 50 minutes
	Waste Walk: Have students prepare to note scientific observations in journal entries during waste walks around public areas of your school where work occurs, including the cafeteria, during different times of a day: morning, during or immediately after lunch, and/or afternoon. Allow the students to discover and record, in a science notebook/journal, locations and evidence of waste they notice (write or draw). The evidence could be noted as the fact of waste itself: waste in a garbage can, pencils or pens on the floor, etc., or it could be evidence of waste inferred: the garbage can itself, the drain in a sink or fountain, a broom or mop. After each waste walk, return to the classroom and debrief the time, location, evidence noted, and reason why they think the evidence was a fact or inference.	

3.	**Pre Assessment**	Estimated time: 50 minutes
	5-Food Waste Pre-Assessment **5-Food Waste Assessment Rubric**	

4.	**Guiding Question: What is waste?**	Estimated time: Two 60 minute sessions

1. From the Waste Walk, project sample journal entries. Ask students:
    a. Is there a way to measure or quantify the waste (quantitative) or is it only notable by description (qualitative)?
    b. Is there an area of waste that seems significant with respect to value or volume?
    c. Suggest the value of food as a gift as shared in indigenous perspectives from learning session 1 and ask if this might be worthy of closer, scientific analysis.
    d. Explain to the class there are protocols to study food waste and for good reason as food waste is one of the most significant wastes humans create for the environment.

    OR

2. Student-centered option – Group the students (3-4) and ask them to
    a. Review and compare similarities and note differences in their waste observations over the prior day(s).
    b. Make a claim about the most significant waste noted.
    c. Support that claim with at least one different piece of evidence from each group member's notes (illustration or written) and
    d. Add to the claim and evidence an empirically-based reason for further study of this phenomena.
    e. Post the claims on the wall for a gallery walk.
    f. Debrief the observation with the class and share or repeat that science starts with a question -- what is waste, where and when did we note waste in our school? Those questions identify refined questions for further study.

3. One of the most significant wastes in our society is food. Pose the question: How is food wasted? Watch The Extraordinary Life and Times of Strawberry (2 minutes)

Note: If lunch occurs in your classroom, this would be an area of study for your waste walks: before / after lunch

5-Food Waste

5.	**Guiding question: How much food and what kind of food is wasted at our school?**	Estimated time: Two 50 minute sessions

**Note: Starting in session three, start building in 'exit ticket' type formative assessment - "What did we just do, and how does that reflect local indigenous food traditions and knowledge?"

****Safety considerations****

- Complete Session 4 and 5 within 24 hrs of each other
- Food allergies - know the relevant allergies of your students, and work with the school health staff/nurse
- Take care to ensure food waste (including accidental liquid waste!) doesn't stray from plastic bags/tarps
- If students single out individual peers for creating specific/too much food waste, interrupt and explain that we are analyzing class data, not individual. Avoid a situation where an individual student or group of students feel bad about their eating habits. This is especially important in this age group, as healthy and unhealthy views on body image and nutrition are forming now.

1. Discuss your plan to audit food waste with the cafeteria staff and ask how they want you to dispose of the liquid waste.
2. Gather supplies needed
    a. ~Six 5 gallon LABELED buckets (*see box below*) per class of students.
    b. Trash bags to line the buckets making for easier cleanup.
    c. One large trash can borrowed from custodial staff

BUCKET LABELS

Label each bucket with just one item, and only make buckets for items actually being served at lunch on collection day. Don't stray from this list, as these are the categories in an online calculator you'll use later.

Meat and	Fish and	Dairy	Grains (rice,

Poultry	Shellfish	products	flour, breads fit best here)
Fruits	Vegetables	Beans and Pulses	(Other - be specific)

3. Go to lunch with your students for one day, unannounced. Bring the labeled buckets. As students begin to finish, share with them the cleanup protocol for today - food and milk goes in labeled buckets, all non-food waste (packaging, milk cartons) and food without a bucket goes into trash/recycling as usual (Optional: You can also collect non-food waste and collect data on that as well). Revealing that you are collecting the waste too early might lead some students to behave differently than they typically would, so waiting until close to dismissal time works best.
4. Once the buckets get half full, consider stopping the collection of that item or switch to a different bucket if you have one. A half-full bucket of liquid can weigh 25 pounds!
5. Get a count of how many students were present during this collection. Note this number; it will be useful later in the data analysis stage.
6. Ask for student help to transport the buckets from the cafeteria back to the classroom; dismiss as usual.

6.	**Guiding question: How can we collect reliable, scientific data about food waste?**	Estimated time: 50 minutes

<u>Sort and Analyze</u>

1. Remind cafeteria staff that you (or students?) will be returning the large trash can today, with solid waste inside. Remind them of the plan you made with them to dispose of the liquid waste.
2. Gather supplies needed
    - Buckets with food and liquid waste and one empty bucket for weighing/modeling
    - A luggage scale, if possible. If not, a bathroom scale can work but is more difficult for this purpose.
    - Gloves, aprons, eye protection for all students who will come in contact with the waste.
    - Clipboards, paper and pencils for students who will capture data during the sort.
    - Blue tarps, contractor bags, or plastic drop cloth /visqueen - large enough to spread the solid waste out onto.

- Large trash can (from the cafeteria) to dispose of solid waste after it is sorted and counted.

3. To limit/prevent future mess, try to drain excess liquids out of the "solid waste" buckets. This can be done before students join you, or anytime before step #7 below.
4. Weigh an empty bucket in front of students, and note that bucket's mass on a chart. Ask why this is useful information to know? (Answer: When we weigh the buckets with waste inside, we can subtract the mass of the empty bucket to find the mass of the waste inside).
5. Assign student roles
   - "Recorder" - These students are equipped with clipboards, pencils, recording sheets (see below for "Food Waste Collection" document), and lined paper for other observations. They capture the weights of each bucket with units, write down observations they make and the observations of those around them as they are said aloud. These students should check in with each other often to ensure they've recorded the same numbers and resolve any differences as they arise.
   - "Weigher" - weighs buckets with waste inside, subtracts weight of empty bucket, records weight for EACH bucket
   - "Spreader/sorter" - When each SOLID (never liquid) bucket is weighed and recorded, these students carefully and calmly pour/distribute the solid waste onto the tarp into a single layer so observations can be made. These students are available to move things around on the tarp if "Counters" request that help.
   - "Non-food hunter" - Looks for non-food items (packaging, forks, etc.) and disposes of them in the trash can. Ideally, these items wouldn't be present and/or would be removed before weighing buckets, but this isn't always practical.
   - "Counters" - Tally and record number of individual items from the tarp - how many apples, how many carrots (estimated), how many pieces of bread, etc. These students also capture other anecdotal observations that they find interesting or potentially relevant.
   - "Clean Team" - armed with paper towels, these students are tasked with preventing and resolving messes. They watch for spills, messy behavior, etc., and check in with the teacher when they have concerns. As "counters" finish with a tarp full of waste, they lead the disposal from the tarp to the trash can, and the resetting of the tarp for the next bucket of solid waste.
6. Students meet in their "student role" groups and talk through their jobs. Students discuss the following questions - "Why is our job important to this process? What might be a challenging part of our job? What can we do to make sure things don't get messy and/or unsafe?" Lead a class discussion on these questions, asking each group to

report. If you see that a student is not prepared to safely/responsibly serve in their assigned role, change the role now.

7. OPTIONAL-Sort! Do this outdoors or on a tile floor, never on carpet. Model calm and slow sorting, then when students show they are ready, turn them loose.
8. Once the last solid waste bucket has been weighed, counted, and cleaned up, lead the class in a more thorough cleanup of the area - return the trash can to the cafeteria, and dispose of the liquid waste as planned with the cafeteria staff.
9. Lead a discussion on the process (try not to get too far into results and data today) of sorting waste, any insights it revealed, and questions it brought up. Record these insights and questions for future conversation.

7.	**Guiding question: What is the effect of food waste in the environment?**	Estimated time: 45 minutes

Data analysis

1. Discuss the experience of examining all that waste, focusing on scientific observations (not "eww yuck" feelings).
2. Use Food Waste Calculator to convert pounds of food waste the class collected into resources (list… kg of co2e, liters of water, etc. etc.
3. The Carbon Cycle Game - Before students play this game, post the following questions:

    a. Is the carbon in the ground different from the carbon in the atmosphere? (*No, it's all the same carbon, it's just moving around the system.)*
    b. What other systems like this can you think of? *(Water cycle, the same molecules of water, H2O, move throughout the system through rain, evaporation, etc.)*
    c. Where, if anywhere, is NEW carbon being made in this system? (*Nowhere, all the carbon already exists, but activities, some human some not, move it from one place in the system to the next*.)
    d. What negative impacts do humans have on this carbon cycle? *(Pulling carbon out of the ground in the form of fossil fuels, putting it into the atmosphere.)*
    e. Why is that bad? *(Greenhouse effect, which we'll learn more about later, but for now we need to know that it makes the planet warmer when there's more CO2 going into the atmosphere than is coming out through plant photosynthesis).*
    f. What positive impacts do humans have on this carbon cycle? (*They can reduce the amount of CO2/fossil fuels they take from the ground and put into the air; they can take food waste out of the landfill, where it breaks down into greenhouse gases, and instead put it in the soil which makes plants grow better).*

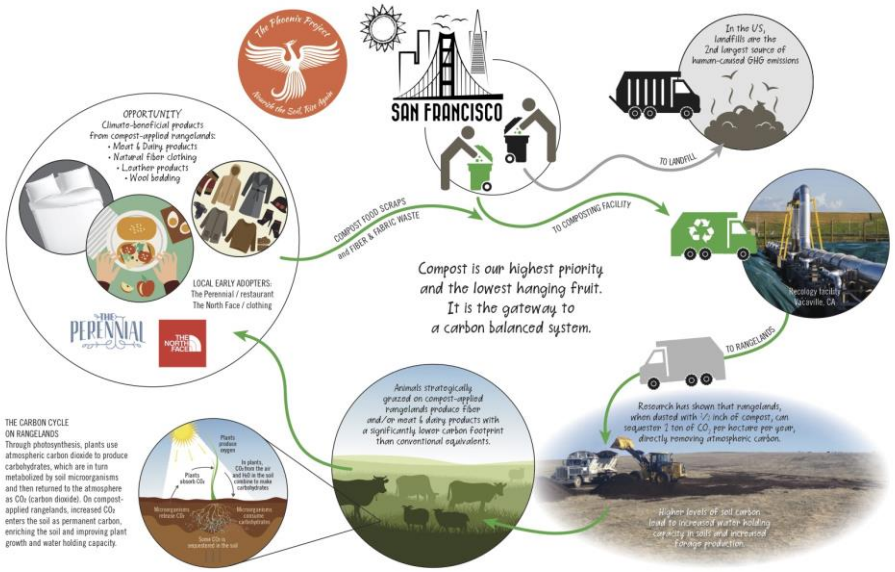
4. Using the video The Greenhouse Effect (2 min), students diagram how Greenhouse Gases work in the biosphere.
5. Model the greenhouse effect Greenhouse Effect Demo.

	6. Students answer the question on their diagram: How do greenhouse gases contribute to climate change. 7. Students discuss their impact on the planet, our school's impact on the planet, our district's impact, etc. etc. Use powers of 10 to multiply, when possible. Create grade-level appropriate visual representations of data (edible vs inedible, biotic vs abiotic). 8. Exit ticket: "Where does the matter and energy from our food waste go after we put it in our trash can?" 9. Homework/Home connection - Talk to a trusted adult about how eating habits have changed from their childhood to yours. Take notes on the conversation using bullet points and short, efficient phrases.

8.	**Guiding question: How do Indigenous values and knowledge relate to lessening your carbon footprint?**	Estimated time: 50 minutes
	1. Pose the question to students: "Think back to your grandparents and great-grandparents, do you think they made more, less, or the same amount of waste as we do?" What changes in culture have led to that? 2. Connect with your local tribe ahead of time to ask for help, and invite a guest speaker to share their tribal perspectives with class. 3. Read resource(s) and watch short video(s) below to build background on cultural values around waste, and how that has changed over time. 4. Create a chart of values around food and waste (don't assume all students have the same values on these topics; this is just a list of different peoples' values). If students don't offer them, include indigenous values you learned from the tribal member. **Videos and resources** - Salmon Boy story video - Salmon Boy-written - Nettle Saved the People. - Reclaiming the Honorable Harvest: Robin Kimmerer TEDxStika - 20 min (A 3 min version of Honorable Harvest is a good alternative) -	

9.	**Guiding question: How can we reduce food waste?**	Estimated time: 45 minutes
	1. What is a carbon footprint, and how can I best reduce my carbon footprint by reducing my waste?" Class discussion about carbon footprint. Students brainstorm and plan. Explain to students their menu of options (poster, skit, video, slideshow, annotated graph, picture book/storytelling, Toontastic, StoryBird, etc.).	

2. Action Plan: “What are you doing that you want to keep doing? What are you doing that want to stop doing? What would you like to start doing that you aren’t doing now?” Students create presentations in the form of claim, evidence, and reasoning Presentation of student products to show understanding of “carbon footprint” and how they as individuals will reduce their footprint/impact/waste. After each presentation, peers offer feedback on presentation style AND action plan for reducing individual impact.
3. Video - Grass Roots (4.5 min) Introduce compost as a solution to diverting food waste from the landfill.
4. Use the image showing CO2 (and general environmental) impact of compost vs. landfill. This is a good place to insert some local information about compost facilities in your area.



Carbon cycle on rangelands by Matter of Trust, © 1998-2020 Matter Of Trust, Inc. a 501(c)(3) Public Charity

10.	**Possible next steps/off-ramps/actions:**	
	Other teachers who have implemented this unit of study found that the opportunities for learning continued to unfold the deeper they got into the topic. For teachers who have the time and flexibility to follow those opportunities and interests as they arise, the possibilities are endless for this unit. For other teachers, the unit must conclude on time so the students can move onto the other required units on time. So, here are some possibilities of conclusions to this project, to be done after students share their engineering/design solutions	

with their peers:

- Students write persuasive essays to school cafeteria staff, school administration, and/or school peers to give recommendations and possible impacts of changes in food serving or eating habits.
- Students create posters showing 'before and after' impacts of their own work on reduction of food waste, and present those posters to a class of students.
- Students prototype their engineering/design solutions to reduce food waste, then present those prototypes in an "invention convention", where other students, teachers and administrators are invited to tour the gallery and hear student presentations.
- Students write fables sharing the tenets of First Foods:
  - Food is a gift
  - Take only what you need
  - Use what you take
  - Give back

- Read Legend of Salmon Boy – if appropriate for the season in your region (others suggested as well in section 2) in addition, read other lesson-based stories from other cultures (fables). Ask what the stories have in common and write these lessons. Share that stories like these are lessons to learn about behavior and occur in different cultures. Particularly relevant are Indigenous legends that share the lessons above. Ask who the characters are in these legends and the fables (commonly animals), and what are their traits (frequently support / antagonize the lesson or are attributed to the animal: trickster coyote or strong lion, etc.). Is there a similar pattern in the stories? And how are the stories resolved?

- Write this pattern on an easel pad or white board leaving space under the pattern elements for the class to brainstorm story element options: characters, traits, lessons, etc. Orally develop some example stories from the pattern elements developed. Ask students to now use the pattern to write their own stories. They can retell a story they heard in practice, create new stories using the pattern elements, or make a completely new story that breaks or modifies the pattern.

- Revise for attributes based on content elements of choice: ELA, social studies, science concepts, etc. For example, in ELA, voice and dialogue work well in this genre, story elements can be symbols of/or examples of science phenomena.

- Make the time to publish: students read the revised stories to the class, post the stories on a bulletin board, etc.

- Share the evolution of stories to demonstrate student growth in parent conferences as well as artifacts illustrating student growth toward meeting content standards.

- If students are interested in what kind of jobs there might be in working to reduce food waste, they can research careers in food sustainability. These careers range from farming and research to media, communication and advocacy positions to policy and

	public health jobs. For more detail, see Get to Work! Jobs in Food Sustainability.

11.	**Post Assessment**	Estimated time: 45 minutes
	5-Food Waste Post Assessment **5- Food Waste Assessment Rubric**	

Reducing Food Waste Resources - Food Waste Resources

OER Tracker - Reducing Food Waste- Food Waste OER Tracker

Pacific Education Institute would like to acknowledge and thank the writing team for their work. The team included Cinnamon Bear, Candy Kristovich, Lourdes Flores Skydancer, Chad Mullen, Shelley Stromholt and Laura Trucker. In you have comments or questions please contact info@pacificeducationinstitute.org

Food Waste Audit

Number of students participating in waste collection: _____

Grade, School, Teacher: _____

Date of collection: _____

Waste accumulated:	**Milk**	**Meat and Poultry**	**Fruits**	**Veggies**		
Total weight in bucket in lbs.						
Minus bucket weight						
Weight of wasted food						

To convert liters to gallons: liters x 0.264

Food Waste Calculator: https://shokawano.shinyapps.io/BEACN_Calculator/ - use “Type” dropdown list, not “Specific Types” dropdown list

One Lunch	**Milk**	**Meat and Poultry**	**Fruits**	**Veggies**			*Total*
Kg CO2e							
Dollar value of food wasted (based on nationwide meal cost)							
Liters of H20 use in production							
Carbon footprint equivalency of driving a vehicle ____ miles							

Name:_____ Date:_____

Lunch Waste Log

Category	Weight

Total lbs: School:

Date of Lunch:

Number of Students Served:

Total Food Waste _____lbs.

Water wasted in food: _____gallons

Greenhouse gas emissions in wasted food: _____lbs. of CO2e\

5-Food Waste

https://shokawano.shinyapps.io/BEACN_Calculator/ or google: BEACN food waste calculator