

“Solutions-Oriented Learning” Storyline

K-Food Waste

Storyline introduction and overview:

While food waste is not typically seen as contributing to greenhouse gas emissions, it is a major contributor, ranking as 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 connect with cultural values around food, impacts of food waste and solutions to food waste issues.

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

<p>Placemaking: Students reflect and record after lunch time, what is left on their tray or lunch pail.</p>	<p>Anchoring phenomena: “What is being wasted?” Each day, I see a lot of uneaten food end up in the trash/compost bins.</p>	<p>Drawdown: Reduced Food Waste</p>
<p>Indigenous and other relevant cultural connections: Values include:</p> <ul style="list-style-type: none"> - Food is a gift - Gather no more than needed - Prioritize needs of community over individual 	<p>NGSS PEs (progress towards):</p> <p>K-ESS3-3- Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.</p> <p>K-2-ETS1-1- Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p>	

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Estimated time required to implement this storyline: 2 weeks

NGSS PEs:

K-ESS3-3- Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

K-2-ETS1-1- Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

Science & Engineering Practice (SEP)	Disciplinary Core Idea (DCI)	Cross Cutting Concept (CCC)
<p>Obtaining, Evaluating, and Communicating Information Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.</p> <ul style="list-style-type: none"> Communicate solutions with others in oral and/or written forms using models and/or drawings that provide detail about scientific ideas. 	<p>ESS3.C: Human Impacts on Earth Systems Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things.</p> <p>ETS1.B: Developing Possible Solutions Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people. (<i>secondary</i>)</p>	<p>Cause and Effect Events have causes that generate observable patterns.</p>
<p>Asking Questions and Defining Problems Asking questions and defining problems in K–2 builds on prior experiences and progresses to simple descriptive questions.</p> <ul style="list-style-type: none"> Ask questions based on observations to find more information about the natural and/or designed world(s). (K-2-ETS1-1) Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1) 	<p>ETS1.A: Defining and Delimiting Engineering Problems</p> <ul style="list-style-type: none"> A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1) Asking questions, making observations, and gathering information are helpful in thinking about problems. (K-2-ETS1-1) Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1) 	<p>Structure and Function The shape and stability of structures of natural and designed objects are related to their function(s). (K-2-ETS1-2)</p>

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<p>Teacher Background: Native Ways of Knowing about Food Waste</p>	
<p>Indigenous peoples’ perspectives and traditional knowledge around waste are a perfect starting place for this storyline. 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.</p> <p>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.</p> <p>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 properly. If someone gathers too much, not knowing how long it takes to clean/dry/cook/chop/freeze/store/etc., they will end up wasting all that life and all of their work. Thus, careful planning and preparation takes place to avoid waste and prepare the foods for the future.</p> <p>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, <u>which is very different for each plant and animal</u>. 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 Traditional Ecological Knowledge (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.</p>	

Learning Sessions

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Materials List:	
Learning session	Materials
1.	Video of Doodlebug story
2.	Copies of lunch tray or lunch box pages for students to draw on. Photos of student lunches before dumping them (anonymous to avoid any food shaming) to be shown as a slide show
3.	Chart paper to record student responses
4.	LoveFoodHateWaste teacher guide Copy “Life of a Strawberry” worksheet, one per learner
5.	Arrange mini-field trip to school kitchen to interview cook about the daily lunch.
6.	Optional Small pictures of student faces to add to self portrait.
7.	Lesson 2 from Zero Waste Education Pack
8.	Lesson 3 from Zero Waste Education Pack
9.	Chart paper

1.	Grounding Native Ways of Knowing	Estimated time: 15 minutes
<p>Play video: Doodlebug story as told by Spokane Tribal Elder Orten Doodle Bug: A Spokane Tribe of Indians storytelling</p> <p>Discuss with your students their takeaways from the story. (Any and all connections are good. Help students notice how much energy and effort goes into obtaining food. Energy concept connection key to later in the StoryLine.)</p>		

2.	Examine phenomena: “What is being wasted?” Each	Estimated time:
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<p>day, I see a lot of uneaten food end up in the trash/compost bins.</p>	<p>15 minutes</p>
<p>Go to lunch with your students one day unannounced. At the end of lunch, take photographs of several student lunch trays and lunch boxes just before they exit the lunchroom. Be sure to not take pictures of students to avoid any negativity surrounding lunch options or waste.</p> <p>Create a slideshow of photos to show the class and ask what they notice about the pictures. What is the same? What is the difference? What is being wasted? Where does all the food that wasn't eaten go?</p> <p>“Each day, I see a lot of uneaten food end up in the trash/compost bins. Draw and label what was left from your lunch today.”</p> <p>Give a copy of either a lunch box or lunch tray to each student. Have them draw what was remaining after they were “finished” with their lunch.</p> <p>Lunch Box and Lunch Tray templates</p> <p>Watch video Wasted Food</p>	

<p>3. Pre Assessment</p>	<p>Estimated time: 15 minutes</p>
<p>K-Food Waste Pre- Assessment</p> <p>Create a chart on chart paper with the title “How can humans reduce food waste?” and record student responses. Rewrite responses below for record keeping purposes. Frame for students: “I think humans can reduce food waste by _____ because _____.”</p> <p>K- Food Waste Assessment Rubric</p>	

<p>4. Guiding question: What are the impacts of wasting food?</p>	<p>Estimated time: 30 minutes</p>
<p>Watch Wasted Food again.</p> <p>Use the Scottish curriculum “Love Food Hate Waste” lesson 1 Be a Food Super Saving Hero.</p> <p>This lesson introduces the idea that a lot of effort goes into getting food from farm to fork and when we waste food we also waste the effort that went into making it.</p>	

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	<p>Over the next three lessons learners will be inspired to save food from the bin, earning different powers when completing each activity, ultimately becoming ‘food saving heroes’.</p> <p>To bring this concept home show the Life of a Strawberry video. Watch The Extraordinary Life and Times of Strawberry (2 minutes)</p> <p>Have students cut apart the Life of a Strawberry picture (page 9) and put them in the proper sequence.</p> <p>Notice the symbols on the pictures. What do they mean? The pictures indicate the type of effort needed in that step.</p> <ul style="list-style-type: none"> •Sun and water symbols - the fruit was grown. •Hand - the fruit had to be picked. •Wheel - all the ingredients needed to be transported to us. •Money - the ingredients needed to be bought by the teacher. •Snowflake - the jellies were put in the fridge and the lollies were frozen. •Make - the jellies, lollies and smoothies were made.
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5.	Guiding question: How much effort goes into making food?	Estimated time: 30 minutes
	<p>Watch Kids Go Green: Reducing Food Waste Lesson 1 part 2 from Zero Waste Education Pack</p> <p>Some food is grown (fruits, vegetables), some is made (cheese, mayonnaise), some is baked (bread and rolls) and some food is cooked (meats).</p> <p>Look at the picture of a roll (sandwich). Label the parts of the sandwich by the type of effort used in preparing those parts.</p> <p>Discuss, why is it important to reduce our food waste? Then watch Black Balloons Energy Saving video . Discuss that food waste also gives off gases that impact Earth.</p> <p>Take a mini-field trip to the school kitchen to see what effort went into the daily lunch preparation (baked, cooked, grown, etc.)</p>	

6.	Guiding question: How can you become a food super saving hero?	Estimated time: 30 minutes
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	<p>Lesson 1 part 3 from Zero Waste Education Pack</p> <p>Ask students to draw a picture of themselves as a food saving hero on the provided worksheet. You may want to insert a photo of their face onto the worksheet. It is worth noting that the stars at the side of the worksheet will be colored in as they progress through the lessons. Tell your learners to wait to color in the stars in a later lesson!</p> <p>This would also be a good time to discuss possible careers that work with food waste. If possible bring in your local waste management department or your school custodian to talk about waste in your community or and describe their job responsibilities, education and their favorite part of their career.</p>
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7.	Guiding question: How can we save food from the bin?	Estimated time: 60 minutes
	<p>Lesson 2 from Zero Waste Education Pack</p> <p>This lesson explores how food can be used in different ways through a practical taste test. Learners are encouraged to challenge their preconceptions about different types of fruit and ‘ugly’ produce. For instance, they might not eat a brown banana but what about a banana smoothie?</p> <p>We are learning that food can be transformed into different things and eaten in different ways. We understand that by doing this we are saving food from the bin and protecting our planet.</p> <p>Preparation</p> <ul style="list-style-type: none"> •‘Farm to fork’ PowerPoint used in lesson 1 - you will need slides 3 and 7. •You will need the ‘Food saving hero’ worksheets completed in lesson 1. On the right of this worksheet there are four superpower stars for learners to colour in when they have developed them. •Print ‘Taste test’ worksheet - 1 per 2-3 learners . •Odd looking fruit and veg - brown bananas, bruised, scarred or misshapen fruit or veg. <p>For the ‘Taste test’ activity you will need:</p> <ul style="list-style-type: none"> •Ice cube trays •Blender & cups for drinking (if making smoothies) •Fruit of choice, fruit cordial & jelly •Cut your fruit of choice into small pieces. •Put some of these pieces to the side and some in the ice cube tray. For half of the fruit in the ice cube trays, cover with a jelly mixture of your choice and leave to set. For the other half of the fruit in the ice cube trays, cover with water and a fruit cordial of your choice and freeze to make fruit ice lollies. Make a smoothie mixture of your choice using any remaining fruit. Recipe suggestions can be found on the Love Food Hate Waste website. The idea with this activity is that the fruit is all the same but in different forms and mixed with different things. 	

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8.	Guiding question: What can we do to reduce our food waste?	Estimated time: 60 minutes
<p>Play video: Doodlebug story as told by Spokane Tribal Elder Orten</p> <p>Doodle Bug: A Spokane Tribe of Indians storytelling</p> <p>Have students discuss: What does this video make you think of now that we have learned more about food, waste and effort?</p> <p>Lesson 3 from Zero Waste Education Pack</p>		
9.	Possible next steps/off-ramps/actions:	
<ul style="list-style-type: none"> ● NGSS Engineering strand: Now that we know there is a problem at our school what can we do now, where we live, to solve it? ● Cedar Box Teaching Toolkit <ul style="list-style-type: none"> ○ This resource has great background knowledge for the teacher in the sections: ○ From White Cap to White Cap – Cultural Ecosystems by Abe Lloyd and Elise Krohn ○ Feeding 7 Generations by Valerie Segrest and Elise Krohn ○ The Impacts of Colonization on Native Foods Access by Valerie Segrest and Elise Krohn ● Make bread ● Connect with a local Master Gardeners program to talk about compost ● Trip to a local farm or waste center ● Invite a city employee to discuss waste management ● Other food waste curriculum: Purdue Food Waste Curriculum ● Video: Kids Go Green: Reducing Food Waste 		
10	Post Assessment:	
<p>First activity: K- Food Waste Post Assessment Part 1 Create a chart on chart paper with the title “How can humans reduce food wastes?” and record student responses. Rewrite responses below for record keeping purposes. Frame for students: “I think humans can reduce food waste by _____ because _____.”</p> <p>Second activity: K- Food Waste Post Assessment Part 2 Directions: After the post-assessment discussion, highlight the student responses (see rubric) that are the best possible solutions to reducing food waste. Students will create a poster (see example in rubric) with a peer or small group to communicate their understanding of the impact of food waste and what humans can do to reduce food waste. Posters should include a sentence (student written or teacher scribed) and a scientific drawing with labels (can be</p>		

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student written or pre-made). Posters can be posted in community areas such as the school hallway, local community centers, school district offices, or local libraries.

[K- Food Waste Assessment Rubric](#)

[OER Tracker - K- Food Waste](#)

Pacific Education Institute would like to acknowledge and thank the writing team for their work. The team included Emily Hopple, Crystal Fissler-Jones, Hattie Osborne and Shelley Stromholt. In you have comments or questions please contact info@pacificeducationinstitute.org

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