



2016-2017

Food Waste and Rescue

Curriculum and Learning Activities for Educators



Purpose

This guide has been produced to help teachers enrich learning and facilitate meaningful dialogue for students around the environmental, social and economic outcomes of food waste and rescue.



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ABOUT SECOND HARVEST: CANADA’S LARGEST FOOD RESCUE CHARITY

Since 1985 Second Harvest has provided an immediate response to hunger in Toronto by connecting surplus food that would otherwise go to waste with people experiencing hunger. We are well-respected in the hunger relief sector and food industry, and are known for being a “one-stop shop” due to our one-of-a-kind fleet, logistical framework, quick response time, and operational capacity.

Unlike many food banks, we provide our food delivery to agencies *free of charge* and do not charge membership or delivery fees

For every dollar donated to us, we provide food for over 2 healthy meals!

We source healthy, fresh foods, maintaining minimum ratios for perishable food (80%) and nutrient-dense food (60%)

We have a strong volunteer base of 1,600 volunteers that donate over 12,000 hours of time (valued at over \$300,000)

History of Second Harvest

In 1985 two remarkable women, Ina Andre and Joan Clayton, were increasingly bothered by seeing good food being thrown away while people went hungry. They built relationships with local delis, bakeries, and grocery stores, and soon received 2,500 pounds of surplus food from seven food donors, which they donated to a handful of social service agencies. 30 years later, as the need for food has grown, Second Harvest has rescued over 115 million pounds of food from a network of over 400 food donors, including farmers, food manufacturers, distributors, retailers, wholesalers, hotels and restaurants. All of the food we have rescued is good, healthy food that is perfectly edible – surplus produce that didn’t sell as well as anticipated and becomes too ripe for stores to display; food whose packaging is in the midst of rebranding; meats that have a close “best before” date and is unlikely to sell in-store. By diverting this food from being sent to landfill, we are able to deliver food to 225 agencies, nourishing over 200,000 people every year, while preventing millions of pounds of greenhouse gas emissions from polluting the atmosphere.



FOOD WASTE IS A GLOBAL ISSUE

An estimated one-third of all food produced worldwide is wasted. It is discarded throughout the supply chain from production, processing and transportation to retail at supermarkets and use by commercial and household kitchens.

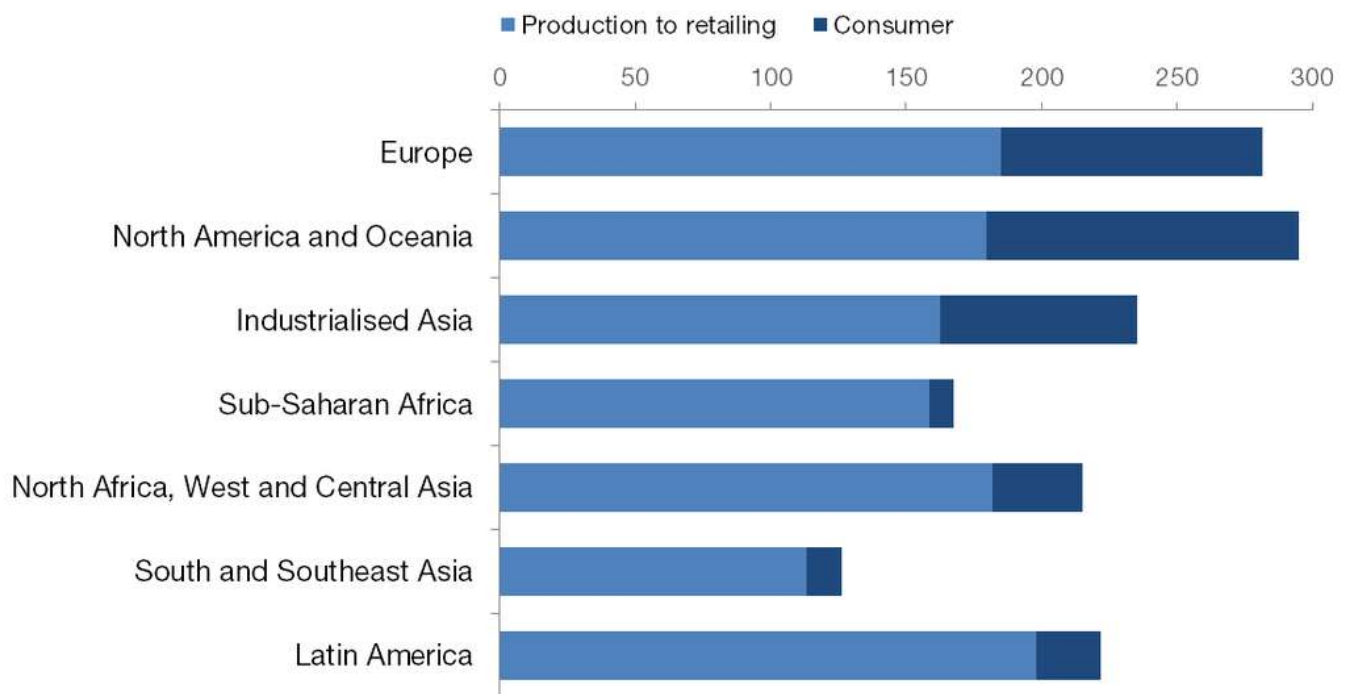
- ❖ Both developing and developed countries produce similar amounts of waste, but at different stages in their supply chains.
- ❖ Developing countries with less financial, technical and managerial capacities have greater quantities of waste earlier on in their supply chain.
- ❖ In developed countries, like Canada, more than 40% of food waste occurs further along the supply chain at retail and consumer levels.

Did you know?

About 222 million metric tons of food is wasted per year at the consumer level in developed countries – that’s almost as much as the total net food production in sub-Saharan Africa (230 million metric tons per year)!

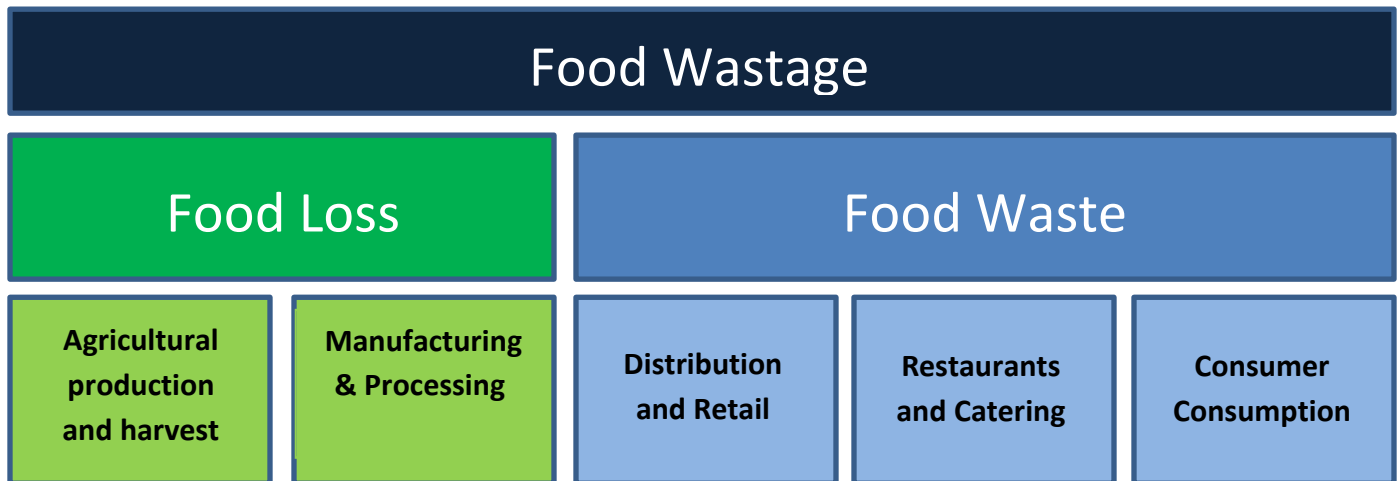
Which regions waste the most food?

Per capita food losses and waste, kg/year



Source: The Food and Agriculture Organization of the United Nations (FAO)

BUT WAIT, WHAT IS FOOD WASTE?



Food loss refers to all food produced for human consumption but not eaten by humans.

Food Waste is part of food loss and refers to discarding or alternative (non-food) use of food that is safe and nutritious for human consumption along the entire food supply chain, from primary production to end household consumer level.

Food rescue is the safe recovery of edible food from all stages of the supply chain thereby preventing good food from going into landfills and composting facilities in order to redistribute that food to those experiencing some level of food insecurity.

Food security is when all people at all times have physical, social and economic access to sufficient, safe, nutritious food which meets their dietary needs and food preferences.

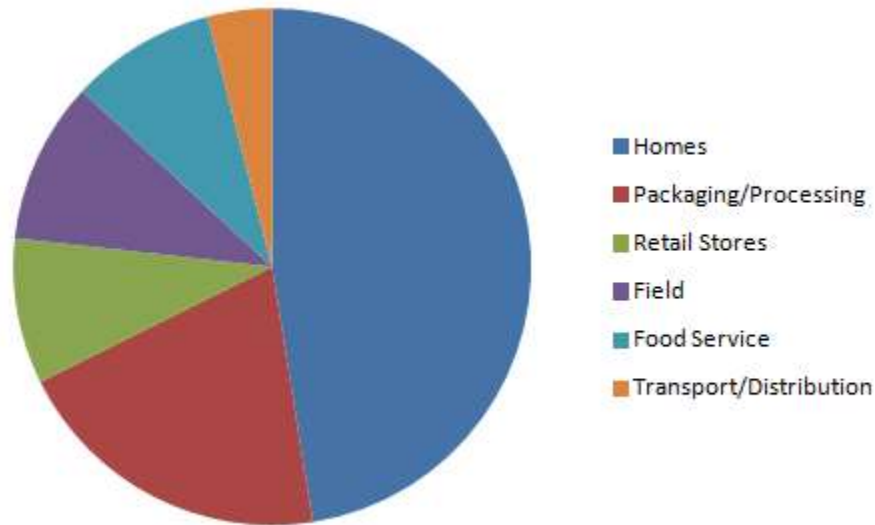


FOOD WASTE IS A CANADIAN ISSUE

The value of food waste in Canada is \$31 billion per year. However, when you take into account the associated costs of energy, water, land, labour, capital, infrastructure, machinery and transport, **the estimated cost of food waste in Canada exceeds \$100 billion per year.**

Approximately 47% of food wasted in Canada occurs at home. The other 53% of wasted food is generated along the value chain.

Percentage of Food Waste throughout the Chain (field to home) in Canada
(Gooch et al. 2014)



Can you believe that over 30% of fruits and vegetables in North America don't even make it onto store shelves because they're not pretty enough for picky consumers!

FOOD WASTE IN THE CITY: THE TORONTO CONTEXT

Local Food Insecurity:

Since 2008 the demand for food banks across Toronto has increased by 13%.

The annual cost for nutritional food in Toronto has increased by \$2,640 since 2009.

Toronto food bank visitors spend 71% of their monthly income on rent and utilities.

In one of Canada's richest cities, **more than 370,000 people struggle to put food on the table**. With a small budget in a city with a high cost of living, hundreds of thousands of Torontonians can't afford their basic needs. They are forced to make difficult decisions with the little money that they have, and often food gets sacrificed. **More than half of food bank visitors report having to skip meals to pay for other bills.**

Impact of Hunger and Food Insecurity




❖ **Poor physical and mental health:** Food insecure children are sick more often, suffer from physical growth impairments, and are at greater risk of developing asthma, behavioural issues, depression, and substance abuse disorders in adolescence. Food insecure adults and seniors are more likely to suffer from chronic conditions such as diabetes, hypertension, mood and anxiety disorders, and congestive heart failure.

- ❖ **Poor cognitive, social, and emotional development:** Inadequate intake of essential nutrients results in weakened ability to learn well, to adapt effectively to stressors, and to deal with social interactions, all of which are necessary to successfully tackle major and everyday challenges.
- ❖ **Low academic and career achievement:** Absenteeism in school and in the workplace, lower educational attainment, and underdeveloped skills are common amongst food insecure individuals.

Six Fast Facts Impacting the Six

<p>1. In Toronto, single-family households discard about 275 kilos of food waste each year.</p>	<p>2. Toronto’s composting program captures about 75% of discarded household food waste.</p>	<p>3. One in four Toronto food purchases ends up in the garbage.</p>
<p>4. Toronto taxpayers spend nearly \$10 million a year getting rid of food waste that’s not composted.</p>	<p>5. There will be at least 11,000 more food-insecure people in Toronto by 2020.</p>	<p>6. There will be at least 40,000 more food-insecure people in Toronto by 2030.</p>

ENVIRONMENTAL AND SOCIAL IMPACTS OF FOOD WASTE

 <p>Biodiversity Loss</p>	 <p>Deforestation and Soil Degradation</p>	 <p>Greenhouse Gas Emissions from Transport and Disposal</p>
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Agricultural land use is not only an environmental liability due to biodiversity loss, soil erosion and forest destruction, agriculture is also responsible for the world’s largest water withdrawals and a substantial proportion of greenhouse gas emissions released in food growing activities. When food is wasted, these impacts come to no avail.

Did you know?

- ❖ Landfilled organic matter produces methane gas (CH₄) which is a greenhouse gas 25x more damaging to the environment than carbon dioxide (CO₂)
- ❖ About 20% of Canada’s methane emissions come from landfills.
- ❖ Approximately 80% of consumer food waste was once perfectly edible.

Other impacts of wasted food include wasted plastic packaging, wasted fertilizer applications, wasted energy to operate facilities, wasted time from actors throughout the supply chain, and wasted labour, which is often precarious to begin with. These are just a few of the many wasted resources that occur when we waste food. Many more exist. **Can you think of any?**



Plastic Packaging



Mined Minerals for Fertilizer Application



Water Withdrawals



Precarious Labour

Other “wasted” impacts:

_____	_____
_____	_____
_____	_____
_____	_____

CURRICULUM FOR GRADE K – 3

Outcomes





Upon completion of this unit, children will be able to:



Outcome #1: Identify where our food comes from.


Outcome #2: Discuss why food is important to healthy growth and development.



Outcome #3: Describe possible solutions to food waste.







Vocabulary – Food groups, Fruit, Vegetable, Grain, Protein, Waste, Spoil, Garbage, Compost



Activities for Outcome #1: <i>Identify where our food comes from.</i>	Useful Resources:
 <p>Video: A positive way to begin the discussion of where our food comes from is highlighted in the following YouTube videos. Show these to your students and ask them if they have ever been to a farm, orchard or food producing garden.</p>	<p>A series of videos can be found here: https://www.youtube.com/watch?v=7IRdS48yuf0</p>
 <p>Does Our Food Come From A Plant Or An Animal? Create an interactive bulletin board with two columns, one titled Plants and another titled Animals. Have a series of cards with pictures of food printed on them. Have the children place the cards in the correct column.</p>	
 <p>BINGO! Create bingo sheets with pictures of plants and animals in the squares. Have cards that say either Plant or Animal and lay these cards face down on the table. Pick up one of the cards and show it to the children. Have the children place a sticker or marker on a picture square that matches the word on the card – either plant or animal. When their whole card is full, shout BINGO.</p>	
 <p>Visit a local farm. This would be an educational activity when it is a “pick your own” opportunity. Talk to the farmer about how the food is grown. Discuss what the fruits or vegetables feel like – are they bumpy or smooth, soft or hard? Talk about the colour and shape, what it smells like and have a taste test when you get back to the school!</p>	






Activities for Outcome #1: <i>Identify where our food comes from.</i>	Useful Resources:
 <p>Create a Scavenger Hunt for a trip to a local supermarket. Give each child a list and stickers to identify when they have found their object. The Scavenger Hunt should have a wide range of items that can be found at a supermarket. If possible, visit a Farmer’s Market and compare what you find. Ask both the supermarket manager and the farmer what they do with food that is left over.</p>	
 <p>Categories. Have a picture of a Grocery Store, a Butcher, a Bakery, a Fish Store and a Family Garden and post them on the blackboard with space underneath. Have a series of pictures of food that might be bought in each of these places. Have the children guess where they would buy each of these items and place them under the correct category. Discuss how some items can be bought in more than one place.</p>	

Activities for Outcome #2: <i>Discuss why food is important to healthy growth and development.</i>	Useful Resources:
 <p>Why do we need food? Ask this question to your class and write down all the answers that come up for the children to see. Here are some good points to end on:</p> <ul style="list-style-type: none"> • Food is important to all living things – plants and animals need food to survive. • People eat fruits and vegetables and some of us eat meat and fish too. We all eat food to nourish our bodies and minds. • Foods that are good for your body help you grow and keep you healthy and give you energy to go to school and to play. 	<p>See this <u>lesson plan</u> for more in depth ideas and a “What Foods Do You Need?” Activity Sheet:</p> <p>www.heart.org/idc/groups/heart-public/@wcm/@global/documents/downloadable/ucm_313225.pdf</p>

<h2>Activities for Outcome #2:</h2> <p><i>Discuss why food is important to healthy growth and development.</i></p>	<h2>Useful Resources:</h2>
 <p>Canada's Food Guide. Go over the 4 food groups and ask the children for examples of each that they eat every day and on special occasions. Print off Canada's Food Guide and keep it on the classroom wall.</p>	<p>Print your copy of Canada's Food Guide here: www.hc-sc.gc.ca/fn-an/alt_formats/hpfb-dgpsa/pdf/ood-guide-aliment/print_eatwell_bienmang-eng.pdf</p> <p>Print your copy of Canada's Food Guide for First Nations, Inuit and Métis here: www.hc-sc.gc.ca/fn-an/alt_formats/fnihb-dgpsni/pdf/pubs/fnim-pnim/2007_fnim-pnim_food-guide-aliment-eng.pdf</p> <p>For general information on the food guide, click here: www.hc-sc.gc.ca/fn-an/food-guide-aliment/index-eng.php</p> <p>Access a resource for Educators here: www.hc-sc.gc.ca/fn-an/alt_formats/hpfb-dgpsa/pdf/pubs/res-educat-eng.pdf</p>
 <p>Food Groups. On chart paper create four columns, one for each of the 4 food groups based on the Canada Food. Have a range of pictures of grains, vegetables, fruits, and proteins, including meats and alternatives as well as milk and alternatives. Have the children place the items in the correct column.</p>	<p>Older students can fill out this worksheet: www.ontario.teachnutrition.ca/docs/default-source/k-3-activities-and-recipes/k-3_food-scramble_dfc.pdf?sfvrsn=4</p>

Activities for Outcome #2: <i>Discuss why food is important to healthy growth and development.</i>	Useful Resources:
 <p>Build my plate. Divide a paper plate into appropriate portions for a healthy dinner or simply print out copies of the “Eat Well Plate”. Have the children choose photos of the items they would like to eat and place them in the appropriate category.</p> 	<p>Find the “Eat Well Plate” handout to print for each student here: www.healthycanadians.gc.ca/alt/pdf/eating-nutrition/healthy-eating-saine-alimentation/tips-conseils/interactive-tools-outils-interactifs/eat-well-bien-manger-eng.pdf</p>
 <p>Eat the rainbow. Variety is essential to maintaining a healthy diet. Talk with your students about how different foods have different kinds and amounts of nutrients that make our bodies healthy and why we should eat a rainbow of foods every day. Have each student colour in the “Eat A Rainbow” colouring sheet.</p>	<p>Click here to print the colouring sheet: www.education.com/download/worksheet/71420/life-learning-eat-a-rainbow.pdf</p>
 <p>Healthy or not? We should eat foods that have many nutrients. Talk about foods that are low in nutrients, like those that are high in sugar, fat and salt. Have a range of food pictures as well as photos of unhealthy food items and have the children decide what is healthy and what is not. Then have each student trace their way through the healthy food maze.</p>	<p>This link provides many activities and lots of information. You can also click here and go to page 24 to print the maze: www.albertahealthservices.ca/assets/info/nutrition/if-nfs-nr-kit-k.pdf</p>
 <p>Global Meals. Pick a meal – breakfast, lunch or dinner and consider it globally. For example, explore what people eat for breakfast around the world. Consider why that item is commonly eaten.</p>	
 <p>Get the royals to their feast! Eat from the four food groups and be physically active for three days straight in order to get the royals to their feast. Print out these activity sheets for students to take home and share with their families.</p>	<p>Activity sheets can be found here: www.ontario.teachnutrition.ca/catalogue/95874A.pdf</p>
 <p>Finding Paradise Island! Print out this activity booklet and hand out to students aged 7 and 8 to learn about Canada’s Food Guide in a fun and challenging way.</p>	<p>Activity booklet can be printed from here: http://ontario.teachnutrition.ca/catalogue/BNU1001.PDF</p>

Activities for Outcome #3: <i>Describe possible solutions to food waste.</i>	Useful Resources:
 <p>Video: In order to understand what food waste is, it is a good idea to first understand the different ways we waste resources during the day and what we can do to alleviate that.</p>	<p>Watch this short clip where Milo learns not to waste: www.youtube.com/watch?v=o0bNx-Ea_B4</p>
 <p>The Food System: We grow, prepare, share, and dispose of food. Set up four stations around the classroom to represent these four stages in the food system and go through the activities at each stage together. If you have classroom volunteers, you can go through each stage simultaneously and divide the class up into smaller groups who rotate. Alternatively, go through each stage during a separate lesson.</p> <ul style="list-style-type: none"> Growing station: Have seeds from a fruit, vegetable and grain of choosing on hand as well as the fruit, vegetable and grain that seed turns into. Ask students how they think the seed turned into the end product. Pick one and act it out with the help of a watering can, a cloud/wind picture, a sun picture and a pollinator (bee!) picture or stuffed animal. Alternatively, have different students act as the different resources and the different growth stages (roots, shoots, branches, leaves, flowers, pollination, and fruit) of the seed. Preparation station: Make a fruit salad or stone soup together. Speak about the different ways to use as much of the fruits and vegetables as possible, even if they look funny or have bruises. <i>This activity can be switched out for the activity named “Stone Soup” below.</i> Sharing station: Talk about why we eat together and share food. How does it make us feel? Share the food that you have prepared and celebrate all the hard work that went into preparing and growing it! Alternatively, ask the students to each bring in a nut-free potluck dish to share in order to learn about what different students eat at home. In both cases, remember to speak about how we share our food with people who don’t have what we have because “sharing is caring”. With an emphasis on learning not to throw away their food, it is important for the children to know that their actions may ensure that another person has food to eat, creating community consciousness. Disposal station: Start a discussion on the different ways to dispose of the things we use during the day once we are done with them. Read a short story on composting and then place a compost bin, a recycling bin, a give-away bin and a garbage bin at the front of the station. Have a separate bucket that the students cannot see inside filled with (pictures of) food and other products we use in day-to-day life (toys, paper, clothing, etc.). Have the students reach into the bucket and take one item each. Have the students come to the front of the station and put the item in the correct bin, based on the discussion earlier on. Not only will the students learn about what can and cannot be composted, 	<p>Click here for a colouring sheet on the 4 elements plants need to grow: https://s-media-cache-ak0.pinimg.com/564x/a8/d0/e4/a8d0e41e26f9a7d4de17789a791a52e5.jpg</p> <p>To engage the children at the Disposal station read a book called <i>Compost Stew</i> (2014) by Mary McKenna Siddals</p>

Activities for Outcome #3: <i>Describe possible solutions to food waste.</i>	Useful Resources:
<p>they will also learn about other disposal methods.</p>	
 <p>5 senses. Bring in a variety of fruits and vegetables that the children might not be familiar with. Hide them in a bag and have the children feel without looking and see if they can identify the food. Explore the textures, the smell, and taste and how they might be prepared for eating – raw, cooked, frozen, etc. Encourage a discussion about how they might be different from what they have eaten at home, but despite the fact that they are new to them, they may be delicious!</p>	
 <p>Imperfect food. Bring in a variety of vegetables that have unusual shapes and explore how they look. Bring in two carrots – one unusually shaped and one shaped in a way that the children would easily recognize. Blindfold a child and have them do a taste test. Can they tell the difference? Share the carrots all around. Discuss how some fruits and vegetables are wasted before they get to us or the shops just because they grow into a strange shape or have a different colour skin than expected. How do the students feel about this?</p>	<p>Hasbro has a new model of an asymmetrical Mr. Potato Head that students can play with.</p> <p>Read <i>The Ugly Vegetables</i> (2001) by Grace Lin</p>
 <p>Stone Soup. Examine some overripe fruit and do a taste test. Talk about how sometimes these fruits are thrown out when they are still good to eat. Then make smoothies or popsicles. Cooking experiences give children firsthand knowledge of the many properties of foods. Spotty bananas make great banana bread, soft tomatoes are perfect for making pasta sauce, and veggies that are starting to wilt are fine to go into soups and great for making stocks. You might ask students to look up (or provide) simple smoothie and muffin recipes. Prepare the food together if possible or ask students to try the recipes at home and report back, or bring in samples!</p>	<p>Read <i>Stone Soup</i> (1947) by Marcia Brown</p>
 <p>What can we do? Brainstorm a list of solutions to food waste with your students. Some may include:</p> <ul style="list-style-type: none"> ● Take smaller servings at a time ● Make Stone Soup ● Take only what you will eat in your lunch box ● Share anything you have left over in your lunch box or bring it home to be eaten later 	
 <p>Get families involved! Create a bulletin board with information about food waste and easy solutions for the home. Let families know what you are working on. Ask for their support both in the classroom and in their homes.</p>	



CURRICULUM FOR GRADES 4 – 8

Outcomes

Upon completion of this unit, students will be able to:

Outcome #1: Demonstrate a basic knowledge of food waste and explore its causes.

Outcome #2: Identify how food waste contributes to hunger.

Outcome #3: Develop strategies to alleviate food waste.

Vocabulary – Compost, Edible, Recycle, Reuse, Garbage, Blemish, Fossil fuels, Non-renewable, Decomposing, Greenhouse gas, Atmosphere, Redistribution

Activities for Outcome #1: *Demonstrate a basic knowledge of food waste and explore its causes.*

Useful Resources:



Statistics on impacts of Canadian food waste. What can your students find through research?

Financial:

- The average family of four throws away \$1,365 to \$2,275 annually on food alone.





Environmental:


- Energy, water, mined minerals and **fossil fuels** that are required to grow, harvest, transport, package, market and sell food also get wasted. These resources are usually **non-renewable!**
- Food **decomposing** in landfills is a significant source of methane emissions, a potent **greenhouse gas** that traps heat in the **atmosphere.**
- Energy is needed to grow and transport our food and this energy use also releases greenhouse gases into the atmosphere. Over time, this can have drastic effects on the climate and year to year harvests. Meanwhile, we take our delicious grub to the dump!

Ask your students how these environmental and financial impacts might affect people who eat and people who grow food?

Dig Deeper! Ask your students where their trash goes, what the benefits of composting are, what best by dates mean. Ask your students if they have had anything past that date and lived to tell the tale.

Activities for Outcome #1: <i>Demonstrate a basic knowledge of food waste and explore its causes.</i>	Useful Resources:
 <p>Home audit. Ask the students to go home and open their fridge and capture what they see (draw, write, picture). Are the items that are most likely to go bad first at the front of their fridge or hiding in the back to be forgotten? Are leftovers stored in clear containers so that everyone can see what is inside?</p>	<p>Use this fridge guide to compare best practice with home practice: www.lovefoodhatewaste.ca/storage/fridge/Pages/default.aspx</p>
 <p>Brainstorm. Ask the students to list all the reasons they can think of about why food is wasted at home, in school and in Toronto. Next, brainstorm a list of possible solutions. Are there any ways that the students try to not waste food in these 3 places? Share ideas.</p>	<p>The following links pose solutions to our larger waste problem and touch on many of the concepts of this section. Focus on the food waste portion of either resource, but integrate whichever activities you think are most suitable. There are lots to choose from!</p> <p>Our friends at FoodShare have a series of free workshops to help you reduce your carbon footprint, including many activities on composting! Check it out here: foodshare.net/custom/uploads/2015/11/Climate_Change_Workshop_Pkg.pdf</p> <p>Our friends at Ontario EcoSchools created this resource on reducing waste at school. Check out the section on cafeteria food waste: www.ontarioecoschools.org/wp-content/uploads/2015/06/10x10-EN.pdf</p>
 <p>Self-assessment. Create a self-assessment scorecard that can be used to evaluate food waste in the lunch program over the course of one week. Ask the students to compare their cards, regroup, and plan to repeat the score card the following week now that they have a better understanding of how food is wasted. Compare the results.</p>	

Activities for Outcome #2: <i>Identify how food waste contributes to hunger.</i>	Useful Resources:
 <p>Hunger and food rescue. Discuss why some people go hungry. Look at Second Harvest’s website and discover some of the stories of people they help through food rescue. Describe how food rescue contributes to fighting hunger. Ask your students what they’ve learned through these stories.</p>	<p><u>Link</u> to Second Harvest 30 Stories www.secondharvest.ca/30stories</p>
 <p>Create grocery lists. What does food actually cost? Check out the weekly flyer for No Frills and a Loblaws store to compare prices between stores and of food groups within stores. Divide into 3 or 4 groups and plan a meal. What can you do with the leftovers? Consider how difficult it might be for some families to provide nutritious meals for their families given the cost. Alternatively, you can plan a short field trip to two grocery stores to compare prices in person. This way the cost reflects actual prices rather than sale prices found in flyers.</p>	
 <p>Video. Watch “Huffington Post Joins Second Harvest On The Road”. Discuss the implications of families who struggle to make ends meet.</p>	<p><u>Link</u> to Video: www.secondharvest.ca/blog/huffington-post-canada-joins-second-harvest-road</p>
 <p>Storytelling. Assign students the task of creating a children’s book that teaches others (students, parents, teachers) about hunger and/or food waste. Remember to include solutions to hunger and/or food waste. The scope (world hunger/waste versus local hunger/waste) is up to the students. Instruct the children to illustrate the books and then place the finished product somewhere where everyone at the school can look through them!</p>	

Activities for Outcome #3: <i>Develop strategies to alleviate food waste.</i>	Useful Resources:
 <p>Imperfect produce. Talk about Loblaw’s Naturally Imperfect and France’s Inglorious Fruit campaigns and talk about the advantages and disadvantages of only selling “beautiful produce.”</p>	
 <p>Food Redistribution. What does redistribution mean and how is it done? Discuss the goals of organizations such as Second Harvest (refer to enclosed information). Are there other examples of food redistribution initiatives or organizations in Toronto, in Canada, and around the world?</p>	
 <p>Compost. Composting at home and at school are great ways to stop kitchen waste from ending up in landfill sites, and our gardens will really thank us for it. Don’t have the room for a composter at your home? Create a personal composter from a large pop bottle. Layer soil on the bottom, followed by fruit and vegetable scraps, followed by leaves and grass or pieces of newspaper, and then continue alternating, leaving soil as final layer. Spray each layer with a fine mist of water. Leave for several months and observe what happens. Has the temperature changed? Does it feel or look different?</p>	<p>Here is a great link on soda bottle composting for kids, including extension lessons: www.planetnatural.com/micro-composting</p>
 <p>Sharing table. Set up a sharing table during lunch time for the children to place items they are not going to eat for others in class to eat. If items are untouched you can arrange the leftover food to be delivered to a food redistribution organization.</p>	
 <p>Record waste. Create a calendar that can be placed on the refrigerator at home to record food waste.</p>	
 <p>Prevention. Take this handy guide by the David Suzuki Foundation home and instruct students to talk to their family about things they might do in their home to prevent food waste. Ask students to share their findings.</p>	<p>The link to 5 Ways To Prevent Food Waste is here: www.davidsuzuki.org/publications/downloads/2012/qog_endfoodwaste.pdf</p>
 <p>Do a quiz! Create a quiz on food waste, prevention, redistribution, compost, and hunger or try the game in the resources to the right.</p>	<p>Here is an example of a food waste quiz: www.wiseuptowaste.org.uk/waste-less/food-waste/food-waste-game</p>



CURRICULUM FOR GRADES 9 – 12

Outcomes





Upon completion of this unit, students will be able to:

Outcome #1: Investigate the implications of food waste in Canada and the world

Outcome #2: Evaluate a variety of potential solutions to food waste and recovery at home, at school and in society at large

Outcome #3: Identify and analyze organizations that transfer potential wasted food to those who have limited access to food

Vocabulary – Biodegradable, Conservation, Sustainable, Decompose, Food Miles

Activities for Outcome #1: <i>Investigate the implications of food waste in Canada and in the world.</i>	Useful Resources:
 <p>What can we do? On chart paper, ask students to brainstorm what they already know about food waste. Ask them what they want to know. From this list, put the students into groups to respond to the questions raised.</p>	
 <p>The food supply chain. Beginning with seeds on a farm, have students trace the route a specific food item travels before it reaches our tables and ask students to create a flow chart and presentation to demonstrate what they have learned.</p>	
 <p>Food miles. If the average food item has to travel 1500 miles, what are some of the benefits of growing your own food? Ask the students if they have grown some of their own food or bought items at a Farmer’s Market. How did the quality and cost compare to food bought in a grocery store? What kind of benefit does a Farmer’s Market bring to the community and is it accessible (physically and financially) to all? What is the environmental and social impact of foods that travel far distances?</p>	
 <p>Be a detective. Investigate what happens when food is discarded in a landfill. What are the implications of greenhouse gases being released into the atmosphere?</p>	



Activities for Outcome #1: *Investigate the implications of food waste in Canada and in the world.*


Useful Resources:












Helpful Hints for Food Shopping. Use the following list of suggestions and discuss how they might influence shopping experiences in student homes. Create a checklist – what do families already do? What would they like to start doing? What would they never do? Ask students to implement for one week all hints that they don't currently use and report back on their success, difficulties and revelations. Below is the full list of suggestions.



1. Purchase only what is needed.
2. Plan meals ahead and use a shopping list, checking what things you already have on hand. Don't shop when hungry.
3. Avoid overdoing it on retail promotions like coupons, buy-one-get-one-free offers, and bulk discounts since you often get more than you need.
4. Eat what you buy and shop often for fresh produce that goes bad quickly and avoid pre-packaged produce, meats and cheese, etc.
5. Watch how much you prepare and be prepared to eat leftovers.
6. Learn to properly store foods so that they keep longer and that your refrigerator is set to the proper temperature.
7. Increase visibility in your refrigerator so that you do not lose track of what you buy. Keep foods that need to be eaten at the front of the fridge.
8. Don't like leftovers? Transform them – create something new and delicious.
9. Freezing, canning, pickling and drying are all great methods to preserving foods, and can even introduce you to some new ways of enjoying food.
10. Use your freezer to store items that you won't be able to use right away such as bread, bananas, leftovers that freeze well, etc.
11. The "use by" and "best by" dates that you see stamped on both perishable and non-perishable products are actually only suggestions for peak quality. The exception is the "use by" date on infant formulas and eggs.
12. Eating out? Don't forget to ask for a doggie bag!
13. Share or donate extra food before it spoils. Offer it to friends, co-workers, neighbours, or local food assistance or recovery programs in the community.
14. Compost food waste in the backyard or at a local compost drop-off site.




Activities for Outcome #1: <i>Investigate the implications of food waste in Canada and in the world.</i>	Useful Resources:
 <p>Create a quiz. Here’s an example: <i>According to the United Nations Food and Agricultural Organization, what percentage of food is wasted on a global level?</i></p> <ul style="list-style-type: none"> a) 25% b) 33% c) 50% <p><i>Answer: b) 33%</i></p>	<p>Or take a test here: www.savethechildren.org/atf/cf/%7B9def2ebe-10ae-432c-9bd0-df91d2eba74a%7D/WFD%20QUIZ.SWF</p> <p>And another here: http://food.caritas.org/wp-content/uploads/2013/11/Cafod-hunger-quiz.pdf</p>
 <p>Food insecurity worldwide. Have students read the <i>Food Waste Footprint Impacts on Natural Resources</i> report from the UNFAO. What are the possible actions for combating food insecurity worldwide?</p>	<p>Here is the report: www.fao.org/docrep/018/i3347e/i3347e.pdf</p>

Activities for Outcome #2: <i>Evaluate a variety of potential solutions to food waste and recovery in the home at school and in society at large.</i>	Useful Resources:
 <p>Toolkit. Sustain Ontario, the Alliance for Healthy Food and Farming, has a household food waste toolkit: “Reducing Household Food Waste: A Municipal Regional Toolkit.” This resource offers suggestions for reducing household food waste for municipal and regional governments, food policy councils, community groups and non-profit organizations like Second Harvest, as well as information about existing initiatives. According to Sustain Ontario, studies show that the greatest value of food waste occurs at the household level, and this toolkit hopes to help change behaviour among consumers as well as offer economic benefits for local and regional governments to reduce food waste footprints. Have your class read the report. Split your class into different stakeholder groups (regional government, municipal government, food policy council, community groups, non-profits, redistribution organizations, etc.) and have them create policy briefs from the perspective of their respective groups. Have groups research the issues these groups may face and write a report on the pros and cons of collaborating with other sectors from the point of view of their group. Have students evaluate three different scenarios in which their stakeholder group is at varying levels of compliance. As a final presentation, set up a roundtable discussion for groups to discuss their findings while acting as the group they represent.</p>	<p>Here is the report: http://sustainontario.com/greenhouse/custom/uploads/2016/09/FoodWasteToolkit_SustainOntario_2016.pdf</p>





Activities for Outcome #2: <i>Evaluate a variety of potential solutions to food waste and recovery in the home at school and in society at large.</i>	Useful Resources:
 <p>Food Recovery Hierarchy. Review the Food Recovery Hierarchy and discuss how relevant this is to your students, schools and communities.</p>  <p>The diagram is an inverted pyramid with six horizontal layers, each with a different color and text. From top to bottom: <ul style="list-style-type: none"> Source Reduction (purple): Reduce the volume of surplus food generated Feed Hungry People (blue): Donate extra food to food banks, soup kitchens and shelters Feed Animals (green): Divert food scraps to animal feed Industrial Uses (yellow): Provide waste oils for rendering and fuel conversion and food scraps for digestion to recover energy Composting (orange): Create a nutrient-rich soil amendment Landfill/ Incineration (grey): Last resort to disposal </p>	
 <p>Movie. Show the movie <i>Just Eat It</i> to the students to begin a discussion around food waste. Review the provided resources. There are many curriculum ideas about how this movie can be utilized by teachers.</p>	<p>Review the <i>Just Eat It</i> curriculum here:</p>
 <p>Poster contest. Students may be challenged to design a poster to raise awareness of food waste. Posters can be entered in a contest at Second Harvest and the winner will be invited to Toronto Taste where the winner will be announced to the public.</p>	
 <p>Measuring waste. Create a contest between schools or between classes or between grades for least amount of food waste. Have students co-create the conditions. Consider how the waste will be calculated and measured.</p>	

Activities for Outcome #2: <i>Evaluate a variety of potential solutions to food waste and recovery in the home at school and in society at large.</i>	Useful Resources:
 <p>Presentations. The following is a list of websites that display extraordinary statements about food waste, some of which are American sources but carry the same important message. Divide the class into three groups and have each group pick one of the following. In small groups students will view their video and prepare a presentation to the rest of the class with a focus on how this information might be translated into action in their school, in their homes, and in their communities.</p> <ol style="list-style-type: none"> 1. https://guelphfoodwaste.com/ 2. http://www.divethefilm.com/default.aspx 3. http://www.foodrescue.net/ 4. https://www.youtube.com/watch?v=Jbo1ZpJBcVE 5. https://www.youtube.com/watch?v=0MDcbplj9oU 6. https://www.ted.com/talks/jamie_oliver?language=e 7. http://www.ted.com/talks/tristram_stuart_the_global_food_waste_scandal 	
 <p>Pick your own video. Because there are so many videos on hunger and food waste on the Internet, ask your students to find a video that they think is powerful and gets the message across. Ask the students to share their videos. For time constraints you may ask your students to limit their choices to less than 10 minutes. After viewing the videos, ask the students what they think they might do to combat food waste in their school, their homes and their community. An alternative is to have your students create their own videos in small groups. They have the chance to learn new skills around creating a story-board, acting, filming, and editing film and audio.</p>	
 <p>Interviews. Ask the students in small groups to interview local food businesses about their policy for reducing or rescuing food that might otherwise be wasted. Compare policies and discuss how further action can be taken. Inform the students that they can assure interviewees that their responses will be anonymous if preferred.</p>	
 <p>Composting. This lesson plan on scientific inquiry into classroom composting will give students both the theoretical knowledge of how composting works and the practical experience of creating a composter and analyzing the processes that makes it work.</p>	<p>Review the curriculum here: www.cwmi.css.cornell.edu/compostingintheclassroom.pdf</p>



Activities for Outcome #2: <i>Evaluate a variety of potential solutions to food waste and recovery in the home at school and in society at large.</i>	Useful Resources:
 <p>Turkey Drive! Gather volunteers from your school to support Second Harvest’s Turkey Drive. Volunteers station themselves at select Loblaw’s stores in the frozen meat department, wear reindeer antlers, Santa hats, and – for a lucky few – full-body turkey costumes, to sell turkeys to generous shoppers. These turkeys are then distributed to agencies in the city to help prepare healthy holiday meals.</p>	
 <p>Video. Watch the CBC’s <i>Marketplace</i> program on Walmart and food waste. Be a detective! What can you find out about food waste at your local supermarket or grocery store? How can you let others in your community know about what you have found?</p>	<p>Link to Video: www.cbc.ca/marketplace/episode/2016-2017/food-waste</p>

Activities for Outcome #3: <i>Identify and analyze organizations that transfer potential wasted food to those who have limited access to food.</i>	Useful Resources:
 <p>Food insecurity. Food Banks Canada states that 13% of Canadians live in a state of food insecurity, which means they do not have reliable access to adequate amounts of safe, good-quality, nutritious food. The root cause of hunger in Canada is low incomes, which affect more than four million Canadians at any given time. What are the implications – physical, social and emotional – for those children, youth and adults who live with food insecurity?</p>	
 <p>Community agencies. What organizations are available in your community to combat food waste? Who is helped by these organizations? Which cities and provinces are most at risk?</p>	
 <p>Video. View the following video: “A Typical Day in Rescuing Food ‘Waste’”. Review Second Harvest's website and discuss how Second Harvest is fighting hunger. Discuss how your school could support the work of Second Harvest.</p>	<p>Link to Video here: www.youtube.com/embed/F1v1izo de0Y</p> <p>Link to Second Harvest website here: www.secondharvest.ca/about</p>



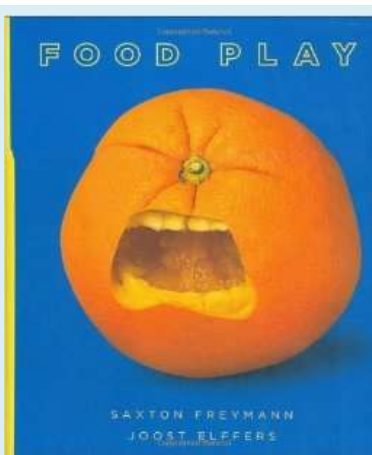
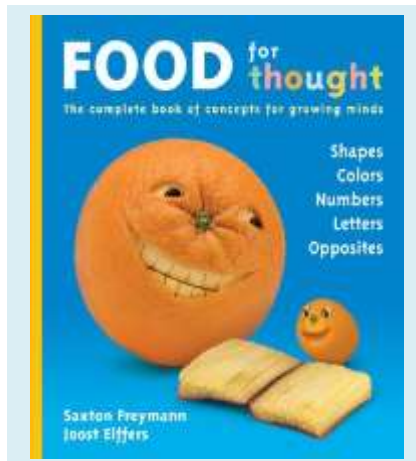
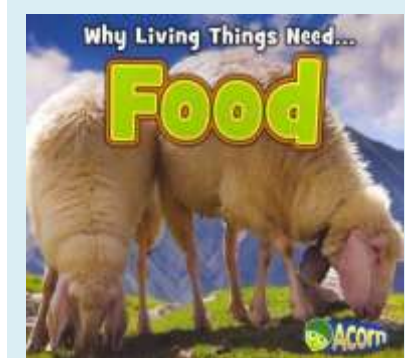
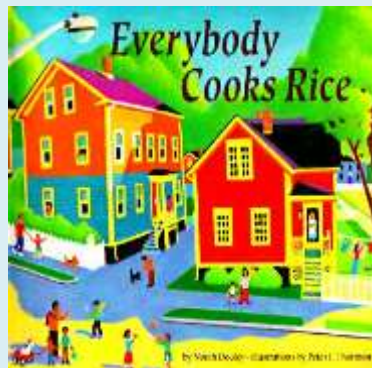
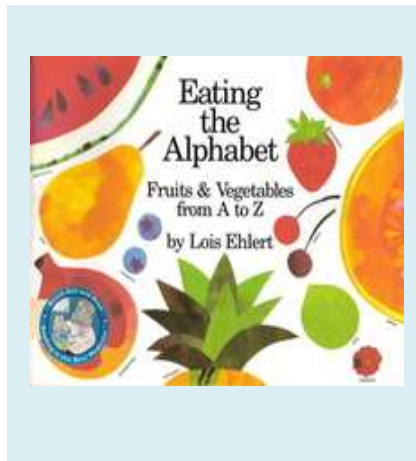
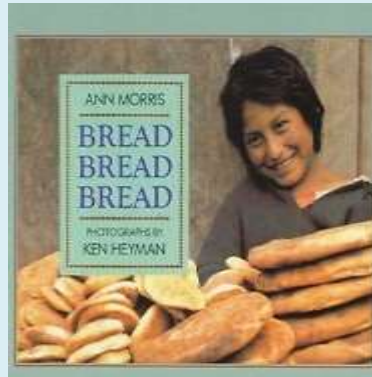
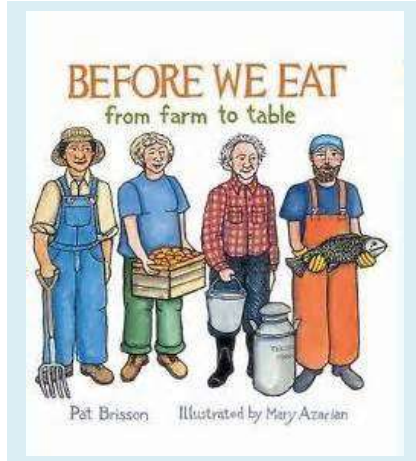
Activities for Outcome #3: <i>Identify and analyze organizations that transfer potential wasted food to those who have limited access to food.</i>	Useful Resources:
 <p>Be A Second Harvest Hero. Second Harvest is the largest food rescue program in Canada. Over 40% of the food Second Harvest rescues goes to children and youth - be a Second Harvest Hero! Engage students in organizing a Second Harvest Hero campaign that will educate fellow students and the community at large. How can your Hero Campaign support people experiencing hunger in your community? Second Harvest will provide the students with a fundraising toolkit to help them get started. Need some ideas to get started? How about:</p> <ul style="list-style-type: none"> • Selling raffle tickets • Lunch Money Day – ask students to make a donation to Second Harvest in place of what they might spend to buy their lunch • Auctioning off donated items 	
 <p>Community programming. Second Harvest delivers food to over 225 agencies in the GTA with more than 70 agencies on the waiting list. Review the list of agencies on Second Harvest’s website. Choose an agency in your community and learn more about the programs they offer. How does the delivery of food from Second Harvest impact this agency? Is it possible for you to volunteer with this agency or for Second Harvest in order to complete your 40 hours of community service?</p>	<p>Link to Second Harvest website here: www.secondharvest.ca/list-of-agencies</p>
 <p>Building capacity. Find out more about Second Harvest’s Harvest Kitchens. This program trains adults and youth with barriers to employment in food preparation, while providing healthy, prepared meals to Torontonians in need. How do the Kitchens improve the lives of the people who work there and the lives of those who receive the prepared food? See if a visit to a Harvest Kitchen can be arranged.</p>	
 <p>Second Harvest Ambassadors. Mark McEwan, Bob Blumer and Roger Mooking are all Ambassadors for Second Harvest. Use their stories to enlist the support of other students in the fight to end food waste.</p>	<p>Watch Roger Mooking's video about Second Harvest here: www.cp24.com/video?clipId=799900</p> <p>See clips of Mark and Bob here: www.secondharvest.ca/30stories</p>

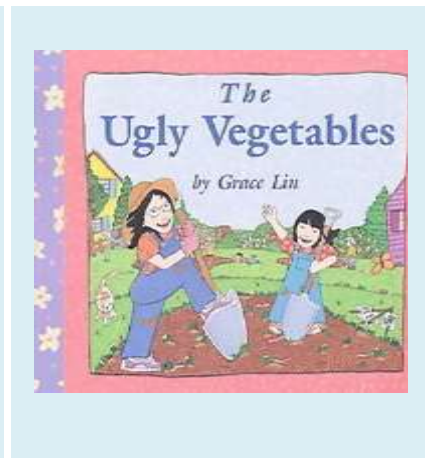
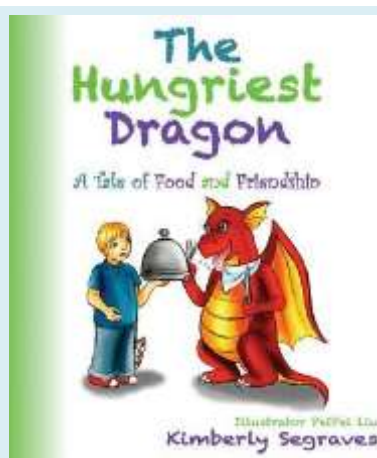
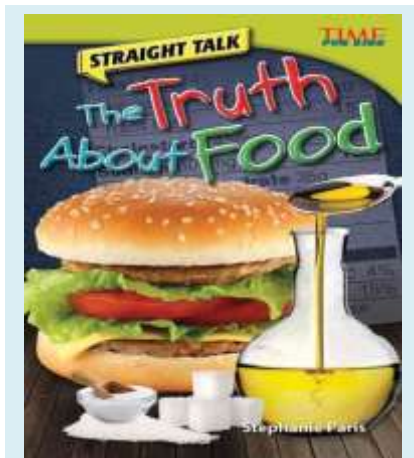
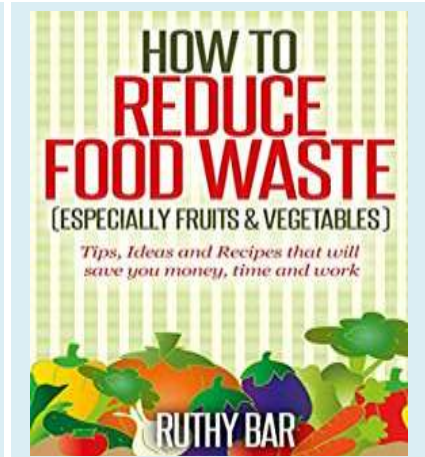
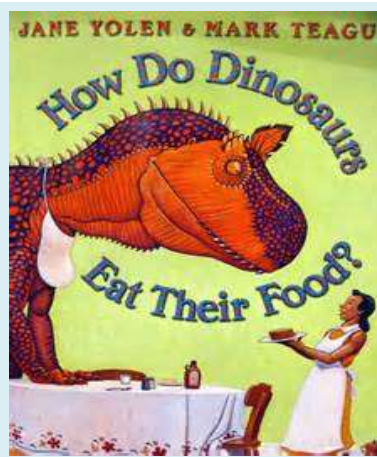
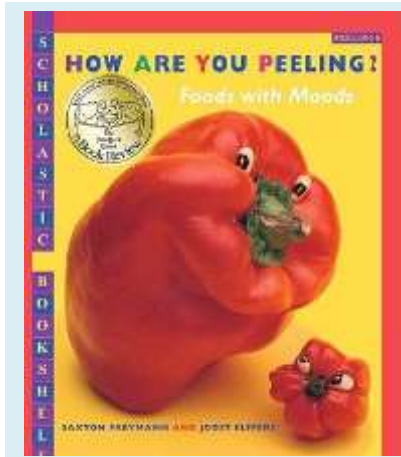
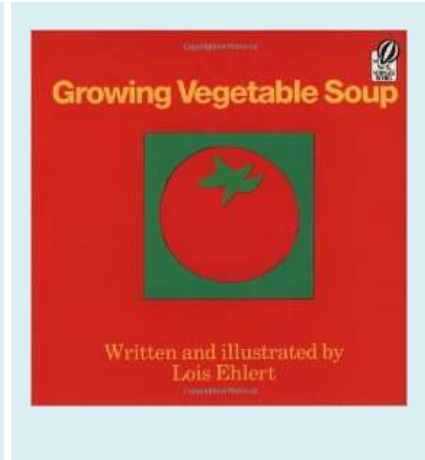
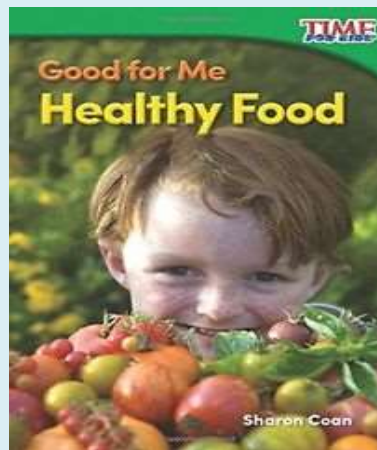
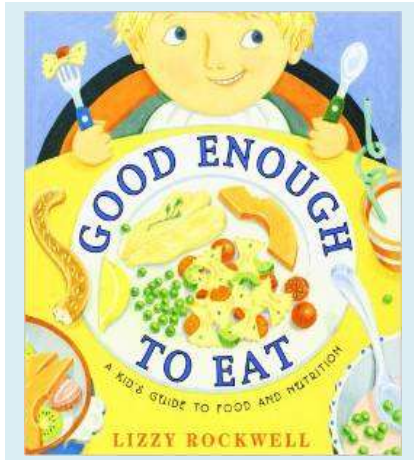


Activities for Outcome #3: <i>Identify and analyze organizations that transfer potential wasted food to those who have limited access to food.</i>	Useful Resources:
 30 Stories. Go on Second Harvest’s website and listen to the many stories of the people who are involved in different ways with this organization. How have your ideas about food waste been altered by listening to these stories?	See stories here : www.secondharvest.ca/30stories
 Visit us! Come and see for yourself! Reach out to Second Harvest and organize a group visit to our head office. Speak to staff and discuss ways your school can support Second Harvest. Start your own Hero Campaign.	

ADDITIONAL RESOURCES

BOOKS: GRADE K - 4







BOOKS: GRADE K - 4 - LIST FORM

Before We Eat: From Farm to Table (2014)
Pat Brisson

Bread, Bread, Bread (1993)
Ann Morris

Compost Stew: An A to Z Recipe for the Earth (2014)
Mary McKenna Siddals

Eating the Alphabet (1989)
Lois Ehlert

Everybody Cooks Rice (1991)
Norah Dooley

Food (Why Living Things Need)(2012)
Daniel Nunn

Food For Thought: The Complete Book of Concepts for Growing Minds (2005)
Saxton Freymann

Food Play (2006)
Joost Elffers

Food Waste (Reduce, Reuse, Recycle!) (2010)
Deborah Chancellor

Good Enough To Eat: A Kid's Guide to Food and Nutrition (2009)
Lizzy Rockwell

Good for Me: Healthy Food (2015)
Sharon Coan

Growing Vegetable Soup (2001)
Lois Ehlert

How Are You Peeling: Foods with Moods (2004)
Saxton Freymann and Joost Elffers

How Do Dinosaurs Eat Their Food? (2005)
Jane Yolen

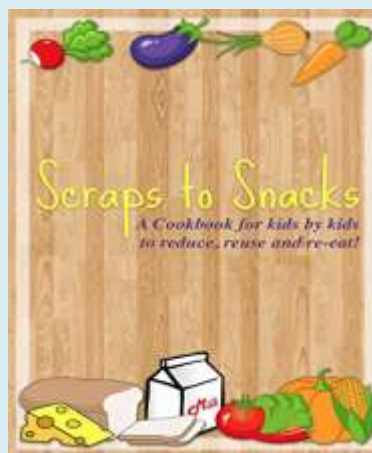
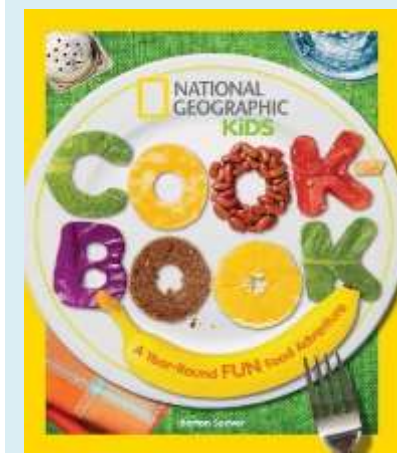
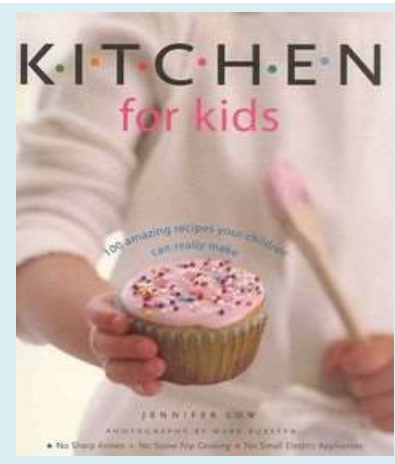
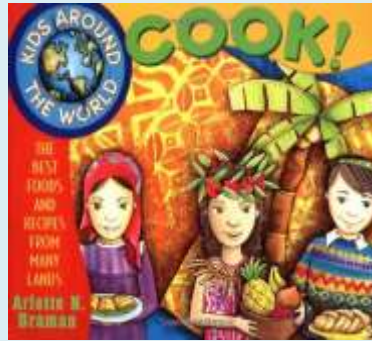
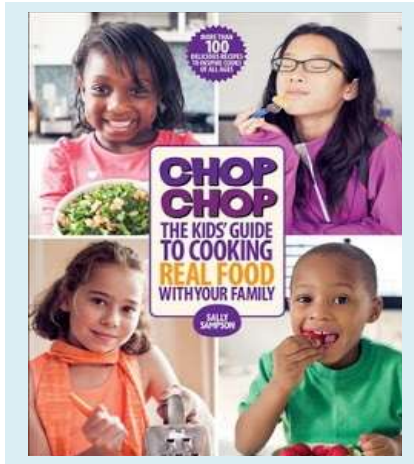
How to Reduce Food Waste: Especially fruits and vegetables (2014)
Ruthy Bar

Straight Talk: The Truth About Food (2014)
Teacher Created Materials

The Hungriest Dragon: A Tale of Food and Friendship (2014)
Kimberly Segraves

Ugly Vegetables, the (2001)
Grace Lin

BOOKS: GRADE 4-8 COOKBOOKS





BOOKS: GRADE 4-8

COOKBOOKS - LIST FORM

ChopChop: The Kids' Guide to Cooking Real Food with Your Family (2013)
[Sally Sampson](#)

Kids Around The World Cook! The Best Foods and Recipes from Many Lands (2000)
[Arlette N. Braman](#)

Kitchen for Kids: 100 Amazing Recipes Your Children Can Really Make (2011)
[Jennifer Low](#)

National Geographic Kids Cookbook: A Year-Round Fun Food Adventure (2014)
[Barton Seaver](#)

Scraps to Snacks: A Cookbook for Kids by Kids to Reduce, Reuse, Re-eat (2015)
[Lightsabers Phoenix Squadron Kids](#)

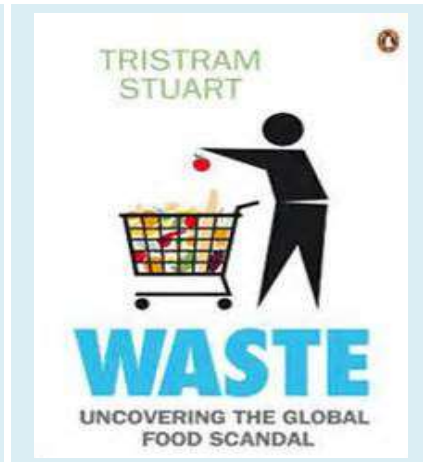
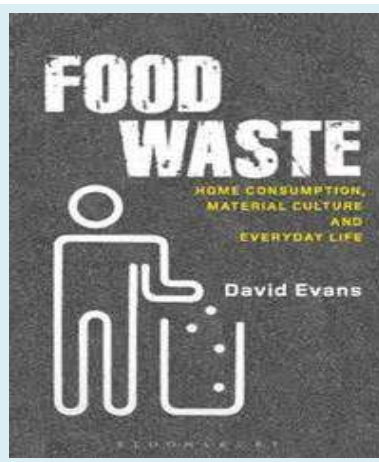
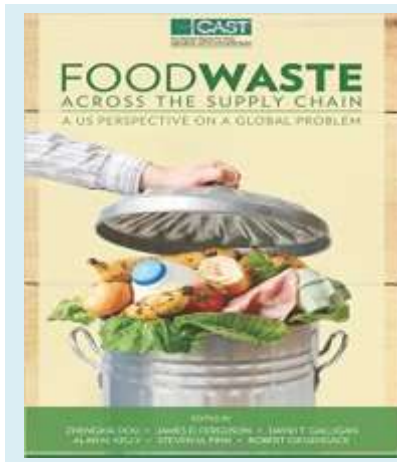
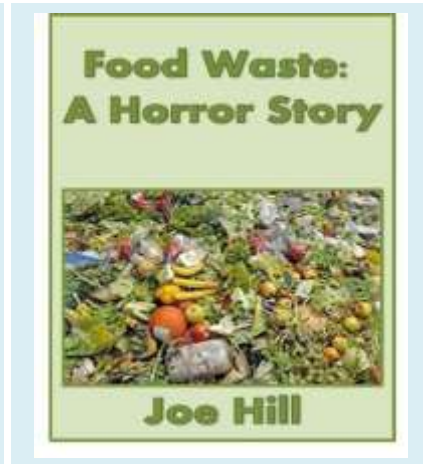
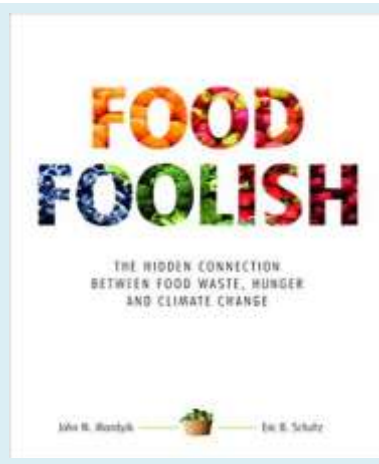
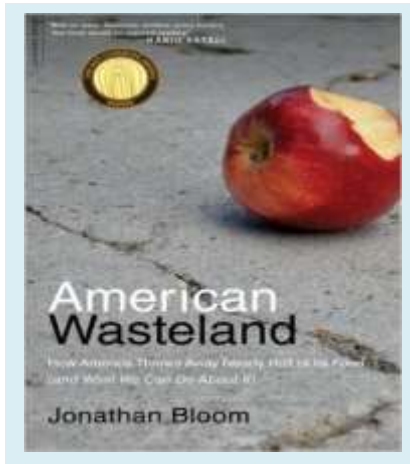
The Help Yourself Cookbook for Kids: 60 Easy Plant-Based Recipes Kids Can Make to Stay Healthy and Save the Earth (2016)
[Ruby Roth](#)

The Waste Not, Want Not Cookbook: Save Food, Save Money, and Save the Planet (2015)
[Cinda Chavich](#)

Too Good To Waste: Making Magic Out of Forgotten Food (2017)
[Victoria Glass](#)

Waste-Free Kitchen Handbook: A Guide to Eating Well and Saving Money by Wasting Less (2015)
[Dana Gunders](#)

BOOKS: GRADE 9 - 12



BOOKS: GRADE 9 - 12 - LIST FORM

American Wasteland: How America Throws Away Half Its Food (and what we can do about it) (2011)
Jonathan Bloom

Food Foolish: The Hidden Connection Between Food Waste, Hunger and Climate Change (2015)
John M. Mandyck, Eric B. Schultz

Food Waste: A Horror Story (2013)
Joe Hill

Food Waste Across The Supply Chain: A US Perspective On A Global Problem (2016)
Zhengxia Dou, James D. Ferguson, David T. Galligan, Alan M. Kelly, Steven M. Finn, Robert Giegengack

Food Waste: Home Consumption, Material Culture and Everyday Life (2014)
David Evans

Waste: Uncovering the Global Food Scandal (2009)
Tristram Stuart



WEBSITES, CURRICULUM, PUBLICATIONS

David Suzuki Foundation

<http://www.davidsuzuki.org/what-you-can-do/food-and-our-planet/help-end-food-waste/>

Food Waste Education Pack

http://www.carymoor.org.uk/foodwaste/food_waste_education_pack.pdf

Love Food Hate Waste

<http://www.lovefoodhatewaste.com/>

Love Food Hate Waste Canada (Vancouver)

<http://www.lovefoodhatewaste.ca/>

WRAP

<http://www.wrap.org.uk/category/materials-and-products/food>

WRAP Report on Food Waste in UK Schools

<http://www.wrap.org.uk/sites/files/wrap/Food%20Waste%20in%20Schools%20Summary%20Report.pdf>

Value Chain Management International

<http://vcm-international.com/food-waste/food-waste-publications/>

