

FOOD FOR THOUGHT

SECONDARY



Learning for a
Sustainable Future

LSF

ACTION TOOLKIT

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OVERVIEW

LEARNING OBJECTIVES:

For students to:

- Analyze the global food system from a 'systems' perspective.
- Understand the ecological, human health, ethical, and economic implications of the global food system.
- Understand how supporting local farmers benefits the natural environment, our personal health, and the economic and social health of our community.
- Become acquainted with the concept of 'food miles' through a pizza-making simulation (actual pizza-making is encouraged!).
- Learn what plants require to grow and experience growing food.
- Understand where food in the grocery stores comes from.
- Translate classroom learning into community action by
 - growing food through a simple classroom-based activity and tasting the harvest,
 - assessing the food options in a local grocery store.

SUSTAINABLE DEVELOPMENT GOALS: *Food For Thought connects to the following [UN SDGs](#)*



To have your class reflect on this action toolkit and their connections to the SDGs, read [Part A: SDG Connections](#).

AGE GROUP: Grades 9-12

PROJECT TIME: Year-round.

* Please help to reduce the amount of paper we all use by only printing off double-sided and necessary pages. Model sustainable behaviour for your students; remember, your actions speak louder than words! [If you wish to access the student worksheets from this action toolkit, you can access them here.](#) *

WHY IS THIS PROJECT IMPORTANT?



The global food system is a particularly relevant system for students to use as they develop their 'systems-thinking' knowledge, skills and attitudes.

Have you ever heard the saying, "You are what you eat"? Think about that. Then think about what you have eaten today.

- Where did it come from?
- What was used to grow it?
- Who produced it?

Why does it matter where your food comes from? This action project investigates why the answers matter for your health, for farmers and rural communities, for communities in far-off places, and for the natural environment that we all share. Specifically:

- Much of the most commonly eaten foods have travelled over 4,000 km from where it is grown to the plate it is eaten on. In the process, large amounts of greenhouse gases are being emitted into the atmosphere.
- When fossil fuels are burned, several pollutants are emitted into the air, including [carbon dioxide, nitrogen oxides, volatile organic compounds, sulfur dioxide, and particulate matter](#).
- Carbon dioxide levels have risen 50% since [the beginning of the industrial era \(1750\)](#). Because carbon dioxide, the most prominent greenhouse gas, absorbs and emits heat, its increase of concentration in the atmosphere tends to have a warming effect. This phenomenon is known as [Climate Change](#).
- Climate Change is considered by many scientists to be the most serious threat facing the world today. Climate change is happening now, and its impact on ecosystems, economies and local weather is already being felt around the world. The [effects can impact Canadians](#) through extreme weather events (flooding, wildfires, heatwaves, snowstorms, etc.), diminished water resources (which may lead to more armed conflicts), dramatic impacts on animals and plants, flooding as a result of irregular

precipitation patterns, ecological changes that support the spread of vector-borne diseases (e.g. West Nile Virus and the Mountain pine beetle), and high economic vulnerability (as a result of damages to natural resources, high migration levels as people flee areas negatively affected by climate change, etc.). If we slow down climate change, we have the opportunity to [reduce the impact of these effects](#).

- Emissions from the burning of fossil fuels also contribute to air pollution, known as smog. Smog has been identified as contributing to [thousands of premature deaths across Canada a year and an increased number of hospital visits](#).
- Respiratory illness, such as asthma, is also increasing. Rates of diagnosed child asthma in Canada [increased by 67% between 2000 and 2011](#).
- Non-renewable energy sources, such as fossil fuels, are exhaustible resources, meaning that they can eventually be used up. As the resource is used, it is not [replenished at the same speed](#), causing the resources to be more scarce and expensive.
- In Canada, we are currently mining the tar sands of Alberta for a non-renewable fossil fuel, oil. This extraction of oil contributes to climate change, respiratory illnesses and deaths and has negative consequences on Alberta's water system. As seen from Google map's satellite view, along the Athabasca River, there are some of the largest collections of waste ponds deposited, so much wastewater that it could fill up more than 500,000 Olympic-sized swimming pools! [To make matters worse, some of these ponds tend to leak directly into our waters through the Athabasca River - one of our longest rivers in Canada](#).
- Buying local food is one way to slow down climate change. Buying locally reduces fossil fuel emissions since it cuts down on the travel time that the food needs to take to get onto our plates. Buying locally also supports the nearby farmers. In Canada, family farmers earn pennies for every dollar spent on food. Currently, when you spend a dollar on potatoes at a grocery store, on average, the local farmer who produced the food receives approximately 21 cents; they also receive about [13 cents for each dollar on fresh vegetables and five cents for fresh fruits and nuts](#).
- Growing food at home or school is a particularly great way to get local food since it has a positive effect on the environment and connects people directly with the wonders of food growth.

FOR MORE INFORMATION, SEE [APPENDIX A](#).

CURRICULUM CONNECTIONS: This Action Toolkit can be linked to Science, Geography, Social Studies, Art, Mathematics, and Health.

For information about curriculum links specific to your province/territory/region and grade, visit the [Food for Thought](#) resource review on R4R.

Differentiated instruction ideas:

In lieu of an activity that may be straightforward for some of your students, you may wish students to:

- Gather media ‘clippings’ and posts about the issue of local food. It has been a hot topic in the news.
- Investigate eating local Initiatives in or near your community.
- Locate local farms, farmers’ markets, and stores which specialize in local food. Create a bulletin board-sized map which promotes these places. Post the bulletin board in the school or the local library.
- Investigate the difference between the “[Made in Canada](#)” and the “[Product of Canada](#)” food labels (“Made in Canada” must pass the 51% threshold of Canadian content, vs. “Product of Canada” must pass 98%).

AGE GROUP: Grades 9 to 12

PROJECT TIME: Year-round.

PART A: SDG CONNECTIONS

Connecting the SDGs to Learning

The United Nations 17 Sustainable Development Goals (SDGs), which were adopted by all United Nations Member States in 2015, provide a holistic understanding of the world's most pressing challenges, linking the social, environmental, and economic dimensions of sustainable development. They act as an urgent call to action for all countries and provide a shared framework using indicators and targets through which we can measure action and progress.

For this reason, it is key for students to understand the 17 SDGs and how their actions and climate initiatives can connect to these Goals. This activity will give students an opportunity to apply the knowledge they gained throughout this action toolkit and think critically about the SDGs.

1. As a class or in small groups, have the students explore the SDGs through the [UN's SDG website](#) and the [Global Goals webpage](#). Students type out or write on a piece of GOOS paper which SDGs they think could be connected to the global food system and why. Alternatively, if your class has an SDG poster or if you would like to create one, students can write down their vermicomposting connections on sticky notes and map them across the poster.
2. Using an active learning strategy, such as a [Talking Circle](#) or [Two Stray, One Stay](#), have the students engage with one another and explore the answers that they wrote down during the second step of this activity. You can find more active learning strategies that might come in handy in [Appendix C: Assessment Opportunities](#) or LSF's [Active Learning Strategy Bank!](#)

SDG Connections: Examples

As you go through this action toolkit, your students may find many connections with the SDGs. Some possible Food for Thought connections that your students could make:



Having an understanding of where your food comes from helps to gain knowledge on food security and sustainable agriculture.



Knowing how your food comes from the farm to the table is an important step to living a healthy lifestyle. Eating locally also helps to keep the air we breathe clean by reducing travel emissions



In order to achieve a sustainable city we must learn how to source our food in a sustainable way. This action toolkit helps your students gain a greater understanding of food costs and miles, which is required knowledge to build clean and sustainable cities of the future.



The backbone of the activities is built on creating necessary consumption and production through responsible practices.



Cutting down the distance that food needs to travel in order to get from farm to table addresses climate action by decreasing transportation emissions.

While these examples act as a starting point, give your students time to ask questions and discover the SDG connections for themselves.

If your students are not yet familiar with the UN Sustainable Development Goals, as a Minds On activity, allow some time for them to get acquainted by watching the video [The World's Largest Lesson](#).

PART B: GETTING READY – ASKING WHY

ACTIVITY B1: THINKING ABOUT FOOD

Time	Description	Material
45 minutes in class 20 minutes at home	Students will journal what they eat over a day or two. As a class, they will watch or read the story 'Life of a Tomato,' which will introduce them to thinking about where food comes from. They will be assigned a few vegetables to investigate at the grocery store	<input type="checkbox"/> Folder or section in binder entitled 'Food for Thought' for journal entries <input type="checkbox"/> Tomato costume (optional) <input type="checkbox"/> G.O.O.S Chart paper <input type="checkbox"/> 'Life of a Tomato' script

Note for Part II: You may wish to have students begin their food log a few days before you do this activity (although it is not necessary). You may also wish to go to the grocery store as a class instead of asking students to visit on their own and/or instead of having students email grocery store managers.

Part I: Watch Video

[Do You Know Where Your Food Comes From? Eat Real. Eat Local.](#)

- After the video, put students in pairs to discuss the following questions:
 - Why is buying, growing and eating local food good for us?
 - Why is buying, growing and eating local food good for our community?
 - Why is buying, growing and eating local food good for our environment?
 - How is eating imported food bad for our environment?
 - With a partner, research the local food markets or farms in your area. Discuss as a class.

Part II: Grocery Detectives

2. **Food Log:** Students should record what they ate throughout the day before the lesson. Each day for the next week, students should keep a log of the food. Ask students for a list of suggestions about other types of information that should be recorded in the log (e.g. the probable origin of the food, positive things about eating the food {for the student, for the natural environment, for other people} and negative things about eating the food, etc.).
3. Regarding the food that they ate yesterday, students should answer the following questions:
 - Is the food listed in your log a good representation of food you normally eat? If not, what other foods do you often eat?
 - Do the adults in your home eat the same foods as you? If not, what other foods might the adults in your home include in their food journal? What food did the adults in your house eat growing up?
 - Where do you get your food from?
 - Do you know what part of Canada or the world your food comes from?
4. **Grocery Detectives:** Have the class generate a list of favourite fruits and vegetables using their record of the food they ate before the lesson. Put the list on chart paper. Assign 1-3 items to each student (there can be overlap) and ask the students to check at the grocery store where their assigned food items come from (if laptops or tablets are available, students can work in pairs or small groups to do in-class research). Review with students what they should look for at the store that might reveal where foods came from. (This might include signs near particular items, labels on boxes or crates, or stickers on fruits). If they aren't able to find the origin of the food by looking, encourage students to ask a store manager. (If it is unlikely that students will have an opportunity to go to the grocery store within an appropriate time frame, students could email or call the managers of local grocery stores).

Food Log Worksheet

	Food I Ate Today (list food and drinks)	Where Did I Get It? (home, I bought it, I shared it with a friend)	Do I Eat this Often? (yes / no)	Other comments? (Eg. taste, packaging, price, etc.)
Breakfast				
Snacks				
Lunch				
Snacks				
Dinner				
Snacks				

ACTIVITY B2: WHERE IN THE WORLD DOES OUR FOOD COME FROM?

Time	Description	Materials:
60 minutes	Students will map as a class and individually (to be glued into their journal) where common produce in our grocery stores come from	<input type="checkbox"/> Large World Map <input type="checkbox"/> Sticky notes to put on the large map <input type="checkbox"/> 8x11 photocopies of blank world map for each student to put in their file <input type="checkbox"/> rulers <input type="checkbox"/> class set of atlases <input type="checkbox"/> food journals <input type="checkbox"/> laptops/Chromebooks (optional)

1. Re-visit the list of fruits and vegetables the class compiled earlier and ask assigned students to name the country where the food came from. Write down the name of the country next to the food.
2. Hand out blank world maps to every student.
3. Help students label Canada and mark your town/city and label it.
4. Using the table of fruits and vegetables with countries of origin (on chart paper) ask student volunteers to find the country on the large map at the front of the class. Have students write the name of the food on a sticky label and place it on the appropriate country. At the same time, all of the students record the information on their own maps - labelling the name of the country and the food imported from there.
5. Using a ruler, students draw a line from their community to each country that there are food connections to. If your map is on a bulletin board, we have found that tying a string (or fishing line) to two pins (from where the food is from back to Canada) works great to create a spider web effect on the map.
6. Ask students to create an appropriate title for the map.

7. Students break into groups of three to discuss the following questions. Project on the wall the following three roles and have the group assign themselves a communication role for each member of the group.
 - Role 1 (investigator): Read investigation questions.
 - Role 2 (time marker): Decide when to move on to the next part of their question. Ensure the group finishes on time.
 - Role 3 (Recorder): Record findings.
- Does anything surprise you? Explain.
- Where did most of the food come from? Which food came from the furthest distance? Which grew closest to home?
- Do you think we would find the same results if we did this during another season? Why or why not?
- What do you think are the advantages and disadvantages of eating foods grown locally versus those grown far away?
8. Discuss the questions as a class. Ask students to write 3 points from the discussion that they find most interesting in their binder/journal. Repeat this process for each group.
9. As a large group, choose one of the food items. Ask students to determine how far the item travelled to get to Canada. Once it got to Canada, did it arrive directly in your local grocery store, or did it go somewhere else first? How did it get from the grocery store to the student's lunch? As a group, calculate the estimated number of food miles. On average (it will depend on the type of transportation), for every kilometre of travel, 15 kg of CO₂ is created.
10. After the last group presents, and before students begin writing in their journals, ask students which of the advantages and disadvantages of eating more locally have anything to do with money, price or trade. (Put a blue mark beside these). Then, ask which of them has anything to do with the natural environment, plants, animals, water, air, or soil? (Put a green mark beside these answers). Lastly, ask which of the advantages/disadvantages have anything to do with fairness, health, education, politics or culture. (Put a brown mark beside these answers). Of course, some pluses/minuses may be related to two or three of the colours.

- Facilitate a discussion about social, environmental and economic advantages/disadvantages [you may wish to consult the 'Why is this Project Important' section at the beginning of this guide to provide students with further ideas]. Explain that the blue marks are beside economic issues, the green marks show the environmental issues, and the brown marks indicate the social issues. When we identify social, environmental and economic issues related to food or any other topic, we are taking a *Triple Bottom Line* approach. This means that we care about all three types of issues – social, environmental and economic - and want to find solutions to the negative consequences of all three dimensions.

NOTE: [This activity has been adapted from 'Where in the World Does Your Food Come From?' by Justine Dawson. Lifecycles Project.](#)



ACTIVITY B3: PREPARING THE SEEDS (DAY BEFORE PLANTING DAY)

Time	Description	Materials:
20 minutes	Students will prepare some of the seeds (as necessary) by soaking them overnight and discuss why this helps the seeds get ready to grow.	<input type="checkbox"/> Paper towel <input type="checkbox"/> Trays or plates <input type="checkbox"/> Spray Bottle of water (one per group) <input type="checkbox"/> Seeds

- Send 1 representative to the seed area to pick up the seeds and a spray bottle.
- Students soak a paper towel. Moist paper towels are placed on plates/trays, and the seeds are placed inside the paper towels. Keep paper towels damp until it is time to plant the seeds. Do not drown the seeds.
- Ask students to turn to their elbow partner and discuss the following questions:
 - What types of seeds do you have experience with (planting seeds, eating seeds, seeing seeds in natural areas, etc.)?
 - What do you know about seeds?

- C. How are seeds transported in the wild?
 - D. What makes a seed start to grow?
 - E. What is the biggest seed you can think of? The smallest?
 - F. Why do we soak some of our seeds? (To trigger our seeds to wake up and start growing, they need moisture and warmth. By soaking them in water overnight, the seed will absorb some water, which will create an interior pressure on the seed coat and encourage it to break open. This process breaks the dormancy of the seed, allowing it to start growing.)
 - G. What are your questions about seeds?
4. Tomorrow we plant - please come prepared to get your hands dirty!

SEED OPTIONS:

Note: The highlighted foods are recommended because you will be able to harvest them by the end of the year.

Carrots	Radish	Beets
Turnips	Rutabagas	Lima beans
Peas	Green beans	Sunflower
Black-eyed peas	Pinto Beans	Tomato
Cucumber	Strawberries	Blueberries
Broccoli	Cauliflower	Squash
Nasturtiums	Bok Choy	Kale
Lettuce	Spinach	Cabbage
Collards	Mustard	Celery
Rhubarb	Onions	Swiss Chard
<p>For quick results, consider microgreens! Check out this web-site for more information: https://fromsoiltosoul.ca/how-to-grow-microgreens-in-5-easy-steps/</p>		

For support choosing heritage seed varieties, visit [Rainbow Seeds](#)

PART C: PLANTING FOOD

ACTIVITY C1: MEET AND GREET AND GROW

Time	Description	Materials:
30 minutes	Students will break into smaller groups to learn about fruits, roots, flowers, stems, and leaves, and to become familiar with what they will be growing.	<input type="checkbox"/> Masking tape <input type="checkbox"/> Markers <input type="checkbox"/> Real vegetables (preferred) or vegetable pictures: tomatoes, broccoli, asparagus, lettuce, potatoes, carrots <input type="checkbox"/> Chart paper <input type="checkbox"/> Information cards below and hat/box

1. Ask students to create a chart with three columns similar to the one below.

Part of Plant	Function of Part	Examples of Foods

2. In a hat, have one information 'card' (below) for each plant structure: fruits, roots, flowers, stems, seeds and leaves. Ask for 6 volunteers to play charades and act out the plant structures. Students come up, pick a card, and take turns acting out their structure.
3. In small groups, provide students with real foods or pictures of foods (use tomato, carrot, lettuce, broccoli, radish, asparagus, bok choy, beans, peas, etc.). Ask them to sort the various vegetables (real or pictures) into either fruits, roots, flowers, stems or leaves and name the appropriate fruits and vegetables in column three.

INFORMATION FOR CARDS:

ROOTS

Roots take up water and nutrients from the soil. Thick roots also store energy for the plant.

STEMS

Stems connect the roots to the leaves. Stems are full of tiny straws that carry liquids up and down.

STEM LEAVES

Leaves are the green energy factories that make sugar from sunlight and simple chemicals.

FLOWERS

Flowers are the male and female parts of the plant that make the seeds.

FRUIT

Fruit is the ripened ovary and seeds of a flowering plant. Fruits are the way that flowering plants spread seeds.

SEEDS

Seeds are small embryonic plants enclosed in a covering called the seed coat, usually with some stored food.

4. Check whether all items were sorted properly.
5. Try to think of 3-4 more foods for each category and add them to the list. See below for help:

Plant part	Examples					
Roots	Carrots	Beets	Turnips	Rutabagas	Radishes	
Seeds	Lima beans	Pinto beans	Green beans	Sunflower seeds	Black-eyed peas	Peas
Fruit	Tomato	Apple	Cucumber	Oranges	Blueberries	
Flowers	Broccoli	Cauliflower	Nasturtiums	Squash blossoms		
Leaves	Lettuce	Spinach	Cabbage	Collards	Bok choy	Kale
Stems	Celery	Rubarb	Onions			

NOTE: This activity is adapted from [Howard Hughes Medical Institute](https://www.hughesmedical.org/).

ACTIVITY C2: SOWING THE SEEDS

Time	Description	Materials:
30 minutes	Students will plant food that they will later harvest (and hopefully eat)	<ul style="list-style-type: none"> <input type="checkbox"/> Planting step cards cut up and placed in envelopes (one envelope with one set of cards per group) <input type="checkbox"/> Pots that will be appropriate for lettuce, a few radishes, or a bean plant to grow to maturity (this will avoid the transplanting step) <input type="checkbox"/> Drainage trays, potting soil or seed starter mix (a little more expensive but more effective) <input type="checkbox"/> Spray bottle with water for each group <input type="checkbox"/> Masking tape for labelling and for sticking plastic wrap if necessary <input type="checkbox"/> Seeds (including any that you may have soaked) <input type="checkbox"/> Tweezers (optional - for handling very small seeds) <input type="checkbox"/> Plastic wrap

1. Divide class into groups. Depending on how much material you have, allow groups to choose an appropriate number of types of plants to grow.
2. Provide each group with a set of the [jumbled cards that describe the planting steps](#).
3. Groups work together to un-jumble the steps.
4. Teacher circulates and checks groups for the correct order. Once groups have identified the correct order, they are given the seeds and permission to proceed with planting. Groups then go through the planting steps as written on the cards.

CORRECT ORDER FOR CARDS

Step 1: Cover tables with newspaper & pick-up materials.

Step 2: Label your tray/containers with your names and with the type of seeds.

Step 3: Place the containers on the drainage tray so that excess water can drain into it.

Step 4: Fill containers with soil so that the soil is 2 cm below the top edge of the pot.

Step 5: Press down on the soil lightly, add more soil, and press down again until the soil is 2 cm below the top edge of the pot.

Step 5: Water the soil until it is very moist all the way through to the bottom.

Step 6: Spread seeds evenly on top of the soil in the tray and poke down into the soil so that they are approximately 1.5 seed deep.

Step 7: Spray the soil with a light mist of water.

Step 9: Put the containers in a place where it will get light.

Step 10: Clean-up: remove the newspaper and place it into a recycling bin, wipe off tables and sweep the floor.

PLANTING STEPS CARDS

Label your tray/containers with your names and with the type of seeds.

Fill containers with soil so that the soil is 2 cm below the top edge of the pot.

Place the containers on the drainage tray so that excess water can drain into it.

Use the spray bottle to water the soil until it is very moist.

Spread seeds evenly on top of the soil in the tray, and poke down into soil so that they are approximately 1.5 seeds deep.

Spray the soil with a light mist of water.

Press down on soil lightly, add more soil, and press down again, until the soil is 2 cm below the top edge of the pot.

Put the containers in a place where it will get light.

Clean-up: Remove newspaper and place into recycling bin, wipe off tables and sweep floor.

Cover tables with newspaper & pick-up materials.

INDIVIDUAL REFLECTION QUESTIONS:

1. Have you ever planted seeds before? If so, what happened?
2. Have you ever planted a plant in a garden before? If so, what happened?
3. Have you ever watched someone plant anything before? If so, what happened?
4. What do you think will happen with your plants this time?
5. Can you think of a plant which produces **two** of the following edible or usable parts: roots, stems, flowers, fruits, leaves, seeds?
6. Working in groups is beneficial and challenging. What was one beneficial thing about working in a group today? Can you think of a way that it could have been more beneficial? What was one challenging thing about working in a group today? Can you think of a way to reduce or eliminate this challenge?

ACTIVITY C3: CREATE A CANADIAN PIZZA!

Time	Description	Materials:
60 minutes	Students will determine the foods that are from Canada and in season. Students will also determine the estimated distance the Canadian food travelled to reach them using the chart provided	<input type="checkbox"/> Stations 1 - 12 with information cards <input type="checkbox"/> Worksheets (1 per pair of students)

PREPARATION

- Students need to have access to a computer
- Post a copy of the basic rules for the students to refer to throughout the activity.
- Post a chart of [distances between Canadian cities](#) to allow students to record estimated distances Canadian grown food travelled to reach them.

BACKGROUND INFORMATION:

- Food miles are the distance food travels from farm to plate. Locally grown food does not travel very far (maybe as little as 30 km into a city centre). Imported food travels thousands of kilometres to reach our plates here in Canada.
- When food is transported by rail, truck, plane, or ship, fuel is burned. When fuel is burned, carbon dioxide and other greenhouse gases are released into the atmosphere, which is warming our planet.
- Food that is transported a long distance will not be as fresh and often not as tasty as local foods.
- For further information, see the 'Why is this Important' section at the beginning of this kit.

ACTIVITY

1. Students will visit the website below that corresponds with their geographical region:
[Western Provinces](#)
[Ontario](#)
[Atlantic Provinces](#)
2. Students will scroll down to the chart that shows in-season produce for all 4 seasons and choose 3-4 toppings that they would like on their pizza and record them in [the worksheet provided called "Shopping For Pizza."](#)
3. Students will then submit their grocery list to their teacher to make sure their ingredients are ok. Students and teacher will then go to the grocery store to purchase ingredients for the pizzas.
4. After students gather the ingredients and information needed, students will calculate the cost of their pizza, the total food miles, and complete the worksheet.
5. Once students have had time to complete the worksheet, review the answers as a class. Create a table to summarize and display the class's findings. A class discussion should highlight some of the differences found in food miles and price in different pizzas depending on season of purchase and topping choices.
6. After all the ingredients are purchased, and the worksheet is filled out, it is time to Make a Canadian Pizza!!!

CLASS DISCUSSION QUESTIONS

Discuss the results of the worksheets as a class.

SHOPPING FOR PIZZA WORKSHEET

[What's in Season? Your Guide to Canadian Produce in the Western Provinces](#)

[What's in Season? Your Guide to Canadian Produce in Ontario](#)

[What's in Season? Your Guide to Canadian Produce in Atlantic Provinces](#)

Names of Group Members:	Date:
--------------------------------	--------------

1. Go to the website above that corresponds to your province to see what produce is in season. Students will then choose 3-4 toppings that they would like on their pizza and record them in the chart below.
2. Complete the table below describing the pizza's main ingredients:

INGREDIENT	Place of Origin (name one)	Food Miles	Financial Cost
		TOTAL KMS:	TOTAL FINANCIAL COST:

3. Now go back to the main page and click on "Get into real food." Try the finder. Locate your Province and City to find fresh food markets in your area.

4. City where you live: _____

Name three local food markets that you can purchase fresh foods at in your area:

a)

b)

c)

5. Name two interesting facts that you learned from shopping for the ingredients put into your pizza.

6. Is the pizza that you created an accurate representation of what ingredients go into a pizza? Why or why not?

7. How could you make your pizza with less 'food miles'?

8. Do you think that most Canadians check where their food comes from and consider that before purchasing food? Why or why not?

9. Do you think reducing our food miles is important? Why or why not?

PART D: ESSENTIAL FOLLOW-UP ACTIVITIES

ACTIVITY D1: REFLECTION JOURNAL

Time	Description	Materials:
30 minutes	Using prompting questions, students will clarify their learning in their Learning Journals	<input type="checkbox"/> Learning Journals

Questions for students to discuss in groups of 4. Students should record their personal responses in their journals, virtually, or on a piece of paper. Have each group number themselves off and answer the following questions to their corresponding number while the others record in their journals.

Student 1: What is the most interesting thing you learned yesterday? All the other students must then guess why that came to that person's mind. Record ideas in journals.

Student 2: Name 2 things you could do to reduce your food miles. Record ideas in journals.

Student 3: Does it matter if our families buy locally grown food? Why or why not? All the other students then comment on the person's answer. Record ideas in journals.

Student 4: Will you try to reduce your food miles? Why or why not?

Students are challenged to use the triple bottom line approach to purchasing food. In their journal, students should write their pledge, which can include asking parents to purchase a local food product, asking the store manager where the ingredients in the snack they are purchasing came from, etc. The student could ask a buddy to sign their pledge. It is the responsibility of the pledge buddy to check in on their peer to help them keep their pledge. In pairs, students present their pledges and actions. Students should keep a journal of what opportunities they had to exercise their pledge, what they did, and how they are feeling about their choices. At the end of 2 weeks, students meet with their buddy to discuss how the pledge went, including their successes and challenges.

NOTE: *If students do not wish to do a pledge, they should be invited to keep track of all of the opportunities that they had to make a more ecologically and socially fair/respectful choice and why they chose to do something different.*

ACTIVITY D2: MAINTENANCE STRATEGY

Time	Description	Materials:
45 - 60 minutes	Using prompting questions within a class discussion, students will create a maintenance strategy to grow their plants	<input type="checkbox"/> Poster Paper <input type="checkbox"/> Markers <input type="checkbox"/> Internet <input type="checkbox"/> Copies of back of seed packages

- Lead a class discussion with the following questions and prompts and record ideas on the board or projected onto the wall.
 - We need to create a strategy to take care of our plants otherwise, it is easy for them to die. If we were talking about a strategy for players in a soccer game, what kinds of things would we need to talk about? (who, what, where, when)
 - 'Who, what, where and when' are key to making ANY strategy - whether it's a strategy to win a soccer game, to study for a test, or to take care of plants.
 - To make a strategy to grow these plants, the first thing we need to ask is: What will these seeds need to grow and become healthy food for us to eat? After students have guessed, have them consult the back of the seed packages (ideally, create a photocopy of the back of the packages for each group).

Prompts, if necessary:

WATER - Do you think the water we already gave them when we soaked them was enough? How can we find out the right amount of water to give each different kind of plant? (Gardening websites such as [Dave's Garden](#))

SUNLIGHT - What do leaves do for a plant? Some plants grow in open grassy fields, and some in the shelter and shade of the forest. How can we find out how much sunlight these plants want?

BUGS - We're not the only creatures that want to eat the fruits and vegetables that we've planted. Lots of bugs would love to eat them too. Unfortunately, if certain bugs get to them, there may be no food left for us. How often should we look at our plants to see if any bugs are eating their leaves? (every time you water them) Where can we find some good ways to get rid of those bugs that will kill the plants? (organic farming websites)

2. In their original planting groups, ask students to use paper and markers to visually depict the maintenance needs of the plants. Remind students to include when the activity needs to be done by listing dates and by whom. At this time, allow students to answer their own questions about how much sunlight (full sun, partial sun) and watering is needed (how often and how much) by searching the internet and/or checking the back of the seed packages.
3. Reflection questions for students to do individually:
 - a) Do you think that your strategy will help you to successfully look after the plants? Why or why not?
 - b) If you were asked to create another strategy for getting something done successfully, what would the strategy be for?
 - c) The next time you create a strategy, what will you keep in mind to ensure that it is a good strategy?

ACTIVITY D3: LIFE STORY OF MY LUNCH

Time	Description	Materials:
30 minutes	Students will investigate the processes and products that go into producing food from a systems perspective	<input type="checkbox"/> Chart paper <input type="checkbox"/> Markers

Students are asked to create a mindmap to depict their understanding of the issues related to the food they eat. For tips on constructing mind maps, check out some of these resources: examples of mindmaps and tips about mind maps, visit:

1. Youtube video: [How to Make a Mind Map - The Basics](#)
2. RMIT on [How to Create a Mind Map](#)
3. [10+ Creative Mind Mapping Examples for Students](#)

If technology is available offer an option to create a digital mind map through the online platform [Miro](#)

- Ask each student to choose the 'entrée' from their lunch. The students should draw that item in the centre of their paper, leaving lots of room for writing/pictures around it.
- Each student should consider how that food item came to be and how it got from its natural state to their lunch. Ask students to draw pictures on their papers that depict that process (encourage them to consider ingredients, transportation, packaging and marketing). Students may wish to use colour coding.
- For all of the steps in the process, encourage students to include the advantages and disadvantages for plants, animals, humans nearby, humans far away. Encourage students to look for interconnections among the concepts.
- After the posters have been assessed, ask students to display their posters on their desks or on the walls. Have all of the students do a gallery tour with the challenge that they must search for 3 new ideas to add to their own poster (in a distinctive colour).

- After the tour, as a class, generate a list of observations about the posters. Write the observations simply but descriptively on a list on the board. For example, many foods had ingredients that are made by humans; many foods had lots of packaging; many foods travelled a great distance to get here; many foods were grown with pesticides; some foods were grown without pesticides (if they have organic labels); etc.

Some other helpful concept map rubrics can be found at:

[Education Resources and Rubrics](#)

[Concept Map Rubric](#)

PART E: EXTENDING THE LEARNING

ACTIVITY E1: TRACING FOOD THROUGHOUT THE AGES

Time	Description	Materials:
1-3 hours in class 1 hour at home	Students will interview an elder in their community (a grandparent, friend, nanny...) about where food came from when they were young. They will paint a mural to illustrate what they learned.	<input type="checkbox"/> Mural paper <input type="checkbox"/> An interview subject (i.e.: an elder in the community) <input type="checkbox"/> Sample interview questions <input type="checkbox"/> Paint brushes, paint and other art supplies

1. Brainstorm with your class a list of questions they could use when interviewing their elder (see below for examples).
2. Explain the interview assignment and set a date for completion of the interviews. Give the students at least one week to independently conduct their interviews.
3. On the predetermined date, have students present what they found in their interview. Note the ideas on paper at the front of the class.
4. Review the ideas, highlighting the most common findings.
5. Divide the ideas up amongst the students, individually or in groups.
6. Roll out paper and dig into paints, crayons, markers, etc., designing a big bright banner that represents the stories the students have heard.
7. While students are drawing, have them play 'So What' in relation to the finding that they are illustrating. First, ask one student in the group to respond to: 'What are you drawing?' Then, instruct the other students to ask, 'So What?' The first student responds. The group then asks again, 'So What?'. Continue as long as the group can go. For example, "I'm drawing my grandma growing rice," "So What?", "Well, I think she grew rice, and ate rice all the time," "So What?", "Eating food you grow is important because that means the food travels less," "So What?", "If the food travels less, then less pollution is made," "So What?", "Air pollution is part of climate change," "So What?", "Climate change is going to make ocean levels rise," "So What?", "If oceans rise, some cities will end up underwater", "So What?", "Lots of people will have to move or might die," "So What?", "It's sad if people die because of something we could have stopped", "So What", etc.

8. Find a wall in the classroom or school where the students' work can be displayed.

SAMPLE QUESTIONS FOR THE INTERVIEW...

- Where did your food come from when you were little?
- Did your family have a garden?
- Did you know the people who grew the food you ate?
- Did your family buy food?
- Where did you buy food?
- Did the food travel far to get to the market/store?
- If you went to a grocery store, how big was it? When was it open?
- What foods do you like now that you didn't have when you were little?
- Did you have ——— (insert student's favourite food)?

NOTE: This activity is adapted from ['Where in the World Does Your Food Come From?' by Justine Dawson. Lifecycles Project.](#)

ACTIVITY E2: HOW SUPER IS YOUR SUPERMARKET?

Time	Description	Materials:
1-3 hours in class 2 hours at home	<p>Students will audit the produce section of two grocery stores. They will then analyze the ability of the store to enhance its performance with respect to the social and environmental consequences of its business. Students will have an opportunity to write a letter to the store manager to request different practices and/or congratulate the store for environmentally and socially positive practices.</p> <p>This activity can also be used as an excellent data management math activity.</p>	<input type="checkbox"/> Audit template <input type="checkbox"/> Letter writing instructions

1. Introduce the concept of an audit. An audit is a word that means ‘to examine.’ If, for example, we did an audit of the paper in this classroom, we could make a chart like this (put a chart up on the board):

Type of paper	Number of pages	% of paper that is made from recycled content	Etc....
Notebooks			
Textbooks			
Etc....			

What other columns and rows could be added to the chart? Give some time to discuss with your elbow partner.

2. Brainstorm with the class the types of things one could audit in a grocery store (number of brands of food, number of lights on, number of services available to people with special needs, etc. - anything you might want to check).

3. What would a really super supermarket be like? Let's use a triple bottom line approach – If the supermarket were super at taking care of the environment, what would its practices be?? If the supermarket were super at working with people (from cashiers to farmers), what would its practices be?? If the supermarket were super at getting good and fair prices, what would its practices be??
4. To identify grocery stores, ask students what grocery stores their parents go to and what grocery stores are closest to them. Which ones would be easiest to go to? Determine the top 2 best choices. Plan a class trip and recruit adult volunteers.
5. What sections are there in our local grocery store? Which ones will you include in your audit?
6. In groups, have students draft an audit template.
7. As a class, share all of the audit templates. Provide groups with an opportunity to revise their audit templates based on ideas learned from the other students ([we have also provided a sample audit sheet for your use](#)).
8. If possible, visit the grocery store as a class or assign a visit and an audit as a homework assignment. You may wish to split up areas of responsibility among the students so that the individual smaller audits can be combined to create a larger, more thorough audit. You may want the students to get the store manager's contact information, including email address.
9. Un-pack the audit with the following questions: Where is the food in your local store from? Which countries provide the most food? The least? Which practices were helpful to the local natural environment? To the natural environment farther away? To people nearby? To people far away? Which practices were potentially harmful to plants? people? etc. How can this supermarket be even more super?

In pairs, students then create an email for the supermarket store manager to request a change to some of the practices and/or to congratulate the store manager for some of the practices at the supermarket. Before they begin, ask students what criteria should be met in order for the letter to be carefully considered by the store manager. For example, if someone wrote the students a letter asking them to change the way that they do their homework, play soccer, or something else important to them, what would help the students to take the arguments seriously?



SUGGESTED CRITERIA:

- Introduce the letter by explaining that you are a student and what school you are from.
 - Write your compliments first. People like to hear about what they are doing well.
 - Clearly state your request(s) (if any) in the second paragraph and in the conclusion. Include as many reasons as possible to explain why your request(s) would make this supermarket even more super.
 - Remember that the store manager might OR might not know about the issues that you are talking about. Read your letter twice; both times imagine that you are the store manager. The first time you read the letter, pretend that you don't know anything about the issues. Ask yourself, 'Was this clear?', 'Does the request make sense?' Read the letter again and this time, pretend that you do know about the importance of local food. This time ask yourself, 'Am I convinced that I should agree to this request?'
 - Try to think about the reasons why the manager may not meet your requests. Can you think of any counter arguments?
10. Follow up to email will depend on response. Possible outcome: dialogue with store manager about the request. Open up a flow of questions from students and answers from the manager. If a request is agreed to, profile the school and students in the grocery store, school newsletter and/or local newspaper as the motivators of this community partnership. If this request is not agreed to, discuss what the next action is (for example, contact the head office for the grocery store and/or the store owner).
11. Invite students to consider other ways to encourage other people in the community to buy locally grown food.



Student Information Sheet



SUPERMARKET AUDIT TEMPLATE

Supermarket: _____

Date: _____

Name of Auditor (your name): _____

Type of Food	Country of Origin	Price	Packaging	Other Comments

STORE MANAGER'S CONTACT INFORMATION:

Name _____

Phone number _____

Email _____

APPENDIX A: BACKGROUND INFORMATION

Farming in Canada

In a wealthy country like Canada, supermarkets overflow with food, some of it sourced from distant parts of the world. To most consumers, the environmental and social costs of this food are not easily seen.

The system that integrates the sourcing, processing, distributing, and retailing of food, is extremely complex and dominated by large transnational corporations which operate on an increasingly global scale. For example, [only four companies control over 75% of the global grain and soya trade in the world](#), and [only two corporations control nearly 80% of Canada's bread-making market](#)

One important by-product of the rising corporate control over the agricultural system is that farmers' share of the income is in a decline as processors, packers, and retailers are taking as much of the income as possible. For example, [a farmer's share of the profit from corn today is half of what it was 40 years ago](#). This trend holds for virtually all agricultural products. Farmers in financially poor countries receive an even smaller share of the profits, unless they are engaged in [a 'fair trade' relationship](#).)

Small Family Farms

Because farmers' share of the total value within the food system has declined in the face of rising operating costs (e.g. seeds, fertilizers, machinery, etc.), their margins for a given volume of produce have been declining, which has produced the long-term pressure to 'get big or get out.' What this means is that many small farms cannot continue in the business and end up getting taken over by larger (often more mechanized) farms, which can continue to operate at lower profit margins per unit of production by producing at a much greater volume. The number of farms in Canada has decreased considerably in the past half-century. [The number of farms has fallen by 44 percent to 189,874 farms in 2021 from 338,552 farms in 1976](#). As more and more people leave their farms, the farms are often replaced by suburban development, which leads to ecological and social strain.

Food Miles

Another important by-product of corporate control over agriculture is rising 'food miles'; that is, the distance that food travels from farm to table. [In Canada, our food miles are particularly striking when examining the fruit and vegetable sector, with 90% of imported fruit having travelled more than 1500 km to get to our tables and 22% travelling beyond 7000 km!](#) Common food items in Canada are bottled water from Fiji, tomatoes from California, garlic from China, kiwis from New Zealand, and coconuts from Thailand.

The trend toward rising food miles precipitates a number of problems. First, it fosters an increasing disconnect between producers and consumers. Second, it is part of an increasing disconnect between consumers and the natural environment, as people increasingly see their food as coming from a grocery store and lose sight (and control) of how it is grown (for example, some pesticides banned in Canada may be legally used in other countries). Third, the burning of fossil fuels used to transport food is a major cause of rising levels of atmospheric carbon dioxide, a primary contributor to climate change. In general, the farther food has traveled, the greater its environmental cost in terms of carbon emissions (the 'carbon footprint').

Making a Difference

On a hopeful note, there are many efforts emerging to re-localize food economies and strengthen connections between producers and consumers. These efforts aim to put a greater share of the value of agriculture back in the hands of farmers, support rural communities, and reduce food miles and the environmental and social costs of food. By choosing locally-grown food, you are exercising your right as a consumer to support a system that is not only more just, but healthier for your community and the natural environment.



APPENDIX B: PLANTING OPTIONS AND TIPS

Different options:

- Plant things that will mature by the end of the school year. Plant them directly into appropriate-sized pots (no transplanting required).
- Plant things that will not mature by the end of the school year. Plant them in pots that are an appropriate size to grow in until June, and then provide students with instructions for transplanting into their garden at home.

Tips

- Ensure plants are watered well on Friday afternoon before leaving for the weekend.
- Remove plastic wrap as soon as plants are 1 cm tall.
- Remove diseased plants immediately to prevent spread.
- When plants grow a second set of leaves (their 'true leaves'), transplant them into their own pots, and they are ready to be adopted out.

If transplanting into containers: Transplanting Wait Times

Vegetables	Approximate weeks until transplanting
Lettuce	4-6
Melons	3-4
Peppers	8-10
Tomatoes	6-8
Herbs	
Basil	6-8
Oregano	6-10



Parsley	10-12
Rosemary	8-10
Thyme	6-10
Chives	6-10
Fennel	4-6
Lemon balm	6-10
Pumpkins	3-4
Squash,	3-4
Broccoli	6-8
Brussel sprouts	6-8
Cabbage	6-8
Cauliflower	6-8
Celery	6-8
Cucumbers	3-4

This information is from [The Old Farmer's Almanac](#)

Growing Vegetables

There are many great resources online that will help answer questions and give you guidance on the maintenance of your plants.

[Kid's Gardening](#)

[The Edible SchoolYard Project](#)

Vegetable Indexes:

[Vegetable Resources](#)

[Gardener's Net](#)

APPENDIX C: ASSESSMENT OPPORTUNITIES

Throughout this action toolkit there are many assessment opportunities available. We recommend going beyond the rubric and journal entry to include options for students to showcase their abilities in ways that benefit their strengths. Below, we have included some assessment ideas that can be used before, during and after the learning! To find out more active learning strategies, check out the [Active Learning Strategy Bank](#), a part of our [Climate Learning resource](#)

1) Graffiti wall

- The students are school artists and are invited to explain to the school community what they think they know prior to and what they have learned in the lesson. Offer a space for students to add words or draw up on the wall.
- A graffiti wall is a tool where you can share ideas and opinions about topics discussed in class.

2) Choice board

- Choice boards are graphic organizers that offer a chance for students to differentiate their learning by having the students choose what assessment they would like to complete. A choice board is composed of different squares, with each square being a different option of activity. Students choose one or more of these activities to complete. They can progress from one activity to another in whichever way it works for them.
- For more information on choice boards [check out this website](#)
- Example of a choice board:

Create a Bumper Sticker	Oral Story about how the “fish/plant/animal” feel being in nature	Make an Announcement
Draw a Picture	FREE CHOICE	Create a dance or yoga session
Make Music (any materials)	Sing a Song	Use Recycled Materials to Make a Model

3) Exit Tickets

- At the end of class, have the students explain how their thinking has changed (with a personal example) as a result of the inquiry during the lesson. This can be done through writing or drawing!
- Checking out this document detailing the [I used to think... Now I think model](#) for exit tickets.

4) Change the School!

- This is a fun challenge that can be done often at the end of the inquiry to have the students make a change in their own school! Students come together in partners or small groups and come up with a plan that will make the school “greener” by using ideas from this action toolkit. Have the students present their ideas to the principal/superintendent/custodians or any other stakeholders.

5) 3-2-1 Strategy

- Have students summarize their learning by identifying 3 things they have learned, 2 things they would like to learn more about and 1 question they still have.
- [Check out this website for more information on the 3-2-1 strategy](#)

6) 30 Second - 1 Minute Sound Bite

- The students work in partners or small groups to summarize a topic to their peers in 30 seconds
- [Check out this video detailing this activity!](#)

7) Tableau

- This drama activity is a great way to have the students engage in their inquiry in a different and unique way! Students create a still picture without talking with their bodies, which communicates the meaning of a concept that they learned in class. Teachers can effectively use Tableau to see newly gained knowledge from the inquiry.
- [For more information on Tableau, check out this website!](#)