Duration: 20 Minutes

Aquaponics Food Miles Game

Grade 3-6

Objective

Students will learn the term ***food miles***, and that food must travel from where it is grown to their home/grocery store. Students will discover how far 10 items of food must travel to arrive at their local grocery store. Students will learn that an aquaponics farm can produce the same 10 foods locally, thereby reducing the ***food miles*** of each item. Students will learn the term ***local food*** and ***non-local food***.

Materials

- Large map of the world (with the 12 key locations marked with distances from Hamilton, see Page 3)
- StudyPonics system or Large posters of an aquaponics farm
- 5 decks of 12 Food Miles Cards
- answer sheet for food cards

Advanced Preparation: Print 5 copies of the Food Miles cards double sided onto cardstock or other heavy stock paper. Cut along outline to create 5 decks of 12 unique Food Miles cards each.

Introduction

"Did you know that your groceries use up a lot of energy? It takes energy to grow food, harvest food, store food, and move it from a farm to the grocery store, where you can buy it. When we are specifically talking about how far food travels from where it is grown, to where you buy it, that is called **food miles***. The more* **food miles** *a product has, the more pollution it creates as it travels. This pollution is just one part of the total energy used to get groceries from farms to your home.*

Let's compare aquaponics to traditional farming and see which type of food production has larger **food miles***."*

Activity

Start a short discuss to get students thinking about where their food comes from.

"At the grocery store, we can buy food from all over the world! Can you tell me some places where your food comes from? How can you tell where the food at the grocery store comes from?"

Write some answers on the board.

"On this map, I have marked 12 places in the world where some of our food comes from. I have given each group a pack of 12 food cards. Your job will be to decide where each food item comes from in the world, and then place the food card beside that location on the map. Let's see where in the world this food comes from!"

Place the map of the world in the middle of the floor. Divide students into 5 groups and have them sit around the map of the world. Give each group a pack of 12 food cards. Give students 5 minutes to place cards on the map.

"Good job! Before I tell you the answers, why does it matter where our food comes from?

Take some answers from students

"That's right, the farther food travels to get to our grocery store, the more pollution it creates and it's not always fresh. What are different ways that we can transport food between farms and grocery stores? All these

vehicles create pollution as they move food around. When we buy food that grows close to us that means moving food, so less pollution. Let's see where this food comes from!"

Read out the answers. Visit StudyPonics system or place poster of aquaponics tank beside map.

"Remember I said that we were going to compare traditional farming to aquaponics? All the food on this map can also be produced at an aquaponics farm! Let's pretend that I just opened a large aquaponics farm right here. I have many tanks and am growing all these fish and vegetables. Help me pick up all these food cards and put them in my aquaponics tank; remember fish in the water, veggies on top."

Move all the food cards off the world map, onto the aquaponics tank poster.

"You could stop by afterschool and buy some veggies and fish. How much travelling would that be? If you are from Hamilton, probably less than 20 km."

Discussion

"We can eat the same food, but have it grow super close to where we live. The food is fresher, and less pollution was created transporting it from the farm to you. When our food grows close to us, we call that ***local food****. When our food grows far away from us, we call that* **non-local food***. We can see that the* **food miles** *for our aquaponics farm products are much smaller than the* **food miles** *for the products from a traditional farm is far away that you would buy at the grocery store. Having a local aquaponics farm would mean that you could buy fresh,* **local foods** *all year round! And less* **food miles** *travelled means that we are creating less pollution. That is good news!"*

Optional If time:

- When you buy food at the grocery store, how can you tell if it is local?
- Do you ever buy ***local food***? What type of farm does it come from?
- Where would be a good place in your community for an aquaponics farm? Is there land that is not good for traditional farming, but would be good for aquaponics? Why?

Answer Page

Plants

Plant	City, Country	Distance (km)
Bok Choy	Campbellsville, Ontario, Canada	42
Lettuce	Courtland, Ontario, Canada	91
Basil	Goodwood, Ontario, Canada	130
Kale	Northumberland County, Ontario, Canada	190
Green Beans	Wisconsin, USA	1063
Red Peppers	Etzatlan, Mexico	4057
Strawberries	California, USA	4190
Tomato	Sinaloa, Mexico	4270

Fish

Fish	City, Country	Distance (km)
Largemouth Bass	Kentucky USA	924
Catfish	Mississippi USA	1800
Salmon	British Columbia, Canada	4830
Tilapia	China	10450

Table 1: Ontario Curriculum Links

Grade	Subject Area	Ontario Curriculum Links
3	Science and Technology	**Growth and Changes in Plants** Specific Expectation: 1.1 assess ways in which plants are important to humans and other living things, taking different points of view into consideration and suggest ways in which humans can protect plants 1.2 assess the impact of different human activities on plants, and list personal actions they can engage in to minimize harmful effects and enhance good effects 3.7 describe the different ways in which plants are grown for food (e.g., on farms, in orchards, greenhouses, home gardens), and explain the advantages and disadvantages of locally grown and organically produced food, including environmental benefits 1.1 analyse the positive and negative impacts of human interactions with natural habitats and communities (e.g., human dependence on natural materials), taking different perspectives into account (e.g., the perspectives of a housing developer, a family in need of housing, an ecologist), and evaluate ways of minimizing the negative impacts
3	Social Studies	**Living and Working in Ontario** Specific Expectation: B1.1 describe some major connections between features of the natural environment of a region and the type of land use and/or the type of community that is established in that region (e.g., ports on lakes or major rivers; farming on flat land with fertile soil; resource towns in areas with ore, trees, or other natural resources)
4	Science and Technology	**Habitats and Communities** Specific Expectation: 1.1 analyse the positive and negative impacts of human interactions with natural habitats and communities (e.g., human dependence on natural materials), taking different perspectives into account (e.g., the perspectives of a housing developer, a family in need of housing, an ecologist), and evaluate ways of minimizing the negative impacts 3.9 demonstrate an understanding of why all habitats have limits to the number of plants and animals they can support

4	Social Studies	Political and Physical Regions of Canada Specific Expectation: B1.3 describe some key actions taken by both industries and citizens to address the need for more sustainable use of land and resources B2.5 evaluate evidence and draw conclusions about issues and challenges associated with balancing human needs/wants and activities with environmental stewardship in Canada
5	Social Studies	The Role of Government and Responsible Citizenship Specific Expectation: B1.3 create a plan of action to address an environmental issue of local, provincial/ territorial, and/or national significance B2.1 formulate questions to guide investigations into social and/or environmental issues in Canada from various perspectives, including the perspective of the level (or levels) of government responsible for addressing the issues B2.5 evaluate evidence and draw conclusions about social and/or environmental issues, outlining the strengths and weaknesses of different positions on the issues, including the position of the level (or levels) of government responsible for addressing the issues B3.6 explain why different groups may have different perspectives on specific social and environmental issues
6	Social Studies	People and Environments: Canada's Interactions with The Global Community Specific Expectation: B1.3 explain why some environmental issues are of international importance and require the participation of other regions of the world, along with that of Canada, if they are to be effectively addressed B2.3 analyse and construct different types of maps, both print and digital, as part of their investigations into global issues, their impact, and responses to them B2.1 formulate questions to guide investigations into global issues of political, social, economic, and/or environmental importance B2.4 interpret and analyse information and data relevant to their investigations, using a variety of tools B3.7 identify countries/regions with which Canada has a significant economic relationship and some of the reasons why close relationships developed with these countries/regions and not others