MyPlate, My Planet

5th Grade Lesson Plan

Goal: Students will learn about links between our food, our health, and the health of the environment, and will understand how the foods we choose to eat, and the food we waste, can affect the planet.

Objectives:

1. Students will be able to name at least one way that their food choices can affect the planet.
2. Students will understand that the food system uses natural resources such as water, and that some foods use more resources than others.
3. Students will be able to name a food choice that is good for our bodies and also good for the planet.

Materials Needed

- ☐ Steps in the food system card sets
- ☐ PowerPoint slides if available

Lesson	
Talking Points	Materials/Activities/Notes
Mind Grabber • We know that eating unhealthy foods can be bad for our health. But can certain food choices be bad for the health of the planet? Are foods that make us healthy the same ones that make the planet healthy? ○ Does anyone have any ideas about how our food choices could make the planet more or less healthy? • In today's class we are going to explore where our food comes from, and how it gets to our plates. We've been focusing so far this year on nutrients in our food and understanding our food choices. Today, we'll take a step back and look not just at our plates, but at the whole planet.	
Discussion **Food Web** • This is a picture of a food web. I believe you will study this in science this year if you have not already, or maybe you are studying it now. • Plants are the first food source in the food web does a food web show us? A **food web** is made up of all of the different food chains in an ecosystem. It shows how energy, which all organisms need to live, moves through an ecosystem from one organism to another. ○ It starts with plants which capture the sun's energy to make their own food. Because plants can make their own food and do not	

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need to eat, they are called PRODUCERS. Plants are the first energy source for all other organisms in the food web who can't use the sun's energy.
    - CONSUMERS are the organisms that eat the producers. Primary consumers eat plants, secondary consumers eat primary and tertiary eat secondary.
    - As we move along the food web, energy is passed along through each chain. Food webs show you the important role that each organism plays in an ecosystem.

Show image of a food web based around plants and animals.

- So, where do we fit into the food web as humans? Let's look at this food web.
    - We can be all three types of consumers, depending on what we eat. If you and your family choose to be a vegan or vegetarian (only eating foods from plants) you are strictly a primary consumer. Does anyone know another name for that?— **herbivore**. Most of us probably eat a mixture of foods from both plants and animals. The name for that is **omnivore.**

Show image of food web that includes humans.

- In the food web on the right, how is the role of humans different from the rest of the organisms?
    - You might notice that there are no organisms that eat humans! Does that mean we don't have to worry about the rest of the web? If we're not in danger of being eaten, is there anything that could endanger us, based on this food web? What would happen if all of the producers died?
    - Another way that the role of humans is different is in how we get our food. How does a fish eat algae? It swims over to it and eats it! How does tuna eat smaller fish? It hunts them! How do we get tuna, chicken, and vegetables? Do we hunt or search for them?
- Raise your hand if you ate food yesterday. Now raise your hand if you grew, found in the wild, hunted, or caught that food yourself. If not, then where did that food come from?

The Food System

- Most Americans today don't do any hunting or foraging. All the food we eat comes from a FOOD SYSTEM. A food system is the path that food travels from field to fork. It includes the growing, harvesting, processing (this might include cleaning, chopping, freezing, etc.), packaging, transporting, marketing, consuming (the yummy part) and the disposing of food.
- Every single kind of food you and I might eat comes from its own food system.

MyPlate Healthy Meal

- Let's look at an example of a healthy meal. This one has chicken, rice, broccoli, strawberries, and a glass of milk. Does anyone know how many food groups are on this plate? That's right, all five of them!

Show image of meal with chicken, rice, broccoli, strawberries, and a glass of milk (or alternate meal). Talk about how each food likely got to their plate.

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- When we're eating a meal, we often think about how it tastes, and sometimes we think about how healthy it is (how it affects our bodies.) But do you ever think about how that food got to your plate?
    - For this meal, the strawberries probably came from a strawberry farm, and the broccoli came from a broccoli farm. Could these grow in North Carolina? Yes, they could—during certain times of the year. Though, if you're eating broccoli in the winter, it was probably imported from Mexico.
    - The chicken came from a chicken farm. Some of these are small, but most are quite big, with lots of chickens. There are some of these farms in North Carolina.
    - Does rice grow in North Carolina? The major rice producers in the world are China and India, and other countries in Asia. But most of the rice that we eat in the U.S. is actually grown in our country, in Louisiana, California, Texas, Arkansas, and Mississippi.
    - And finally, we all know that milk comes from cows! Dairy farms are found across the country. In the United States, most milk is produced in California and Wisconsin.

- What are the steps between when a food is first grown or raised, and when it ends up on your dinner plate?
    - Let's use an example that many of you have eaten before: a peanut butter and jelly sandwich! How do all those different parts get to your plate so that you can enjoy a yummy meal or snack.

Activity: Hand out a set of food system production cards to each group. There are five sets: apples, milk, jelly, peanut butter, and bread. Each group should sort the production cards so that they are in order from the first to the last step of the food system. Briefly discuss their answer, but the longer discussion will be the next part of the lesson.

Steps of Food System

- All the food we eat goes through a food system.
- Some foods we eat may not go through all of these steps, but the following are the general steps in a food system.
    - First, the food is grown, such as corn growing on a farm.
    - Then, that food is harvested.
    - Next, it is transported to the place where it is processed. This may be far away.
    - Next, that food is processed, which can itself be many steps. Corn may be turned into corn syrup, corn flakes, cornbread, soda, tortillas, or much more.
    - Next the processed food is packaged into boxes, cans, or other containers.
    - That food is next sold to stores by wholesalers.
    - Next, the stores sell the food to consumers—that's you and me!
    - We then prepare and eat the food.
    - And the last step is disposal, in which we throw away or recycle the food packaging and any food we didn't eat.
- The next time you're eating a food, stop and think about all the many steps it went through to reach your plate! How far did it travel? How many people were involved? How many resources were used?

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- We're going to talk about a few of these steps in detail. First, we'll think about growing—which could mean growing vegetables or grains, but could also mean raising pigs, cows, and chickens for meat, dairy, and eggs.

Growing

- What does food need to grow?
- Imagine you are a farmer, and you want to grow some plants. What do you need?
    - Great ideas! Yes, we will need sunlight, water, land, and many other things like seeds, air, fertilizer, pesticide, and more. Is there unlimited land in the world?
    - Is there unlimited water in the world? No! We call these natural resources, and we need to be careful about how we use them.
- Now let's imagine that you're a cattle farmer, raising cows. What do you need to raise cows? Just like with growing plants, we need land, and we need water. We also need to feed the cows! Cows eat some grass, but we also feed them using the plants we grow.
    - Does a cow eat just once in its lifetime? No! Just like with people, cows eat every day, multiple times a day.
    - So remember all those things we need to grow plants? If we want to raise cows, we need all those natural resources again, but this time many more of them—because cows eat many, many times throughout their lives.

Show diagram of resources needed both to grow corn and to raise a cow who eats the corn for food.

Choose Veggies to Save Water

- Let's focus on just one natural resource to compare these differences – water.
- It takes much more water to raise cows, pigs, and chickens than it does to grow vegetables. And not all animals use the same amount. How much water does it take to produce beef for a hamburger?
- Look at how much water is used in producing beef! Let's look at how much water it takes to produce chicken for a chicken sandwich.
- Which sandwich uses more water? Raising a beef cow takes more water and resources because a typical beef cow in the US eats thousands of pounds of corn and soybeans during its lifetime. Growing all of the crops that are eventually fed to beef cattle require huge amounts of water, fertilizers and fuel to power farm machinery, land for farm fields and so forth. It all adds up. Producing beef uses a lot more water than what is used to produce chicken. Vegetables like potatoes and corn use the least of all.
- Why does this matter—isn't there plenty of water in the world? Yes, but not clean, drinkable water. The water in the oceans is salty, so we can't drink it. It's important to be careful with the water we use—that's why we don't leave our showers running when we're not using them! If you want to save water, it's actually more effective to cut down on eating meat than it is to stop showering for a whole year.

Show image of hamburger.

Show image of hamburger = 470 gallons of water

Show image of chicken sandwich.

Show image of hamburger/ chicken sandwich comparison.

Show image of the earth.

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Vary Your Protein Choices

- Does this mean we should never eat beef or meat? No, of course not!
- Let's remember MyPlate and our five healthy food groups. We do need protein to grow, to build strong muscles, and to heal. But do we have to eat meat to get protein? Can anyone name a protein food that comes from a plant?
- Nuts, beans, and tofu are all healthy protein food choices that come from plants, and don't use as many resources to produce as meat does. It's fine to include meat in the foods that we eat, but try to mix it up by sometimes choosing protein foods that don't come from animals.
- Also, remember portion size! The protein food group only takes up 1/4 of MyPlate. If I fill my whole plate with a giant steak, that's not good for my body or for the planet.
- A healthy way to eat both for our bodies and for our planet, is to eat a variety. Eating a variety means eating different foods from each of the food groups, rather than eating the same foods every day.

Show image of MyPlate and protein foods poster.

Processing

- Next, we're going to talk about another step in the food system: processing. Food processing is the transformation of food from raw materials (like fruits, veggies, and grains) into products for consumers (such as potato chips, crackers, and fruit juice.) Foods are processed for many reasons. Processing foods can help to make foods last longer, make them taste different, add flavor, make foods safer, and make foods more convenient.
- It's important to recognize that some foods are more processed than others. For example, they may have more steps of processing, or they may have more significant changes from their raw form to their processed form.
    - Think about an apple. It needs to be grown, picked, transported, packaged, and sold, but does the apple itself go through many changes in a factory? No. What about Takis? Are they grown on Taki trees? No! They have to be changed a lot from the raw ingredients.
    - Looking at the ingredients list, we can see there are lots of things that go into making Takis. Corn, soybeans, sugar (from sugar cane), why and cheese powder from milk, MSG, food coloring…and much more! Do Takis look much like any of these ingredients? No. They have to be changed a lot to make them into Takis. Takis are a highly processed food.
- Highly processed foods
    - Is the nutritional quality of food related to how processed it is? Are highly processed foods, for example, less healthy than minimally processed foods?
    - Although highly processed foods are not always unhealthy, many foods in this category are high in added sugar, sodium, saturated

Show image of just an apple compared to many of the individual ingredients in Takis (corn, soybeans, sugar, rice, food coloring, milk, etc.)

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fats or trans fats and contain fewer good nutrients, like vitamins and fiber.

- MyPlanet
    - How are these foods different in the way they affect the earth? Foods that are whole, or close to whole, use fewer resources because they are not extensively processed and often have no or minimal packaging. When something is highly processed, it takes more resources from the earth to produce.
    - In this bar graph the green bars show how healthy a food is. The red bars show how processed a food is. If we looked at this bar graph and assumed the green bars show how good a food is for the health of our planet, the bars would look just about the same.

Show processed food bar graph examples from Food Day curriculum.

Disposing

- The last step in the food system is disposing. This is an easy step to forget! And yet when we're thinking about how food choices affect the planet, the food we dispose has one of the biggest impacts.
- One fourth or more of the food grown in the United States is wasted each year. Can you think of why someone would throw away food? Maybe it's moldy, or stale, or we just decided we didn't want to eat it anymore. Or maybe we put too much on our plates, then decided we didn't want to eat it all.
- Does this mean we need to eat moldy food? No! And if we have too much food on our plates, we should still listen to our bodies and only eat what we need to eat. But there are lots of other changes we can make to reduce food waste.
    - It starts with making sure we don't buy too much food at the grocery store, and making sure that we put foods in the fridge to keep them fresh.
    - If you want to be an advanced food-waste-reducer, you could try to plan out what you want to eat before you go to the store. You can also start a compost pile at home, which is a way of turning food scraps back into dirt.

Show food waste slide.

Wrap-Up

We know that eating unhealthy foods can be bad for our health. And now we've learned about how food choices can also affect the health of the planet. And, it turns out that foods that make us healthy are the same ones that make the planet healthy!

Many of the same principles that we've discussed this year about how to keep our bodies healthy apply to how we can keep the planet healthy as well.

- Filling half our plates with fruits and vegetables – eat more plant-based foods
- Eating a variety of foods – especially protein group foods
- Eating more whole foods (and less processed foods)
- Eating in moderation

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We know it's important to make sure we eat a healthy diet, with foods from all five food groups. But it's also important to think about how what we eat affects the planet. By choosing lots of in season, fresh veggies; including protein choices from plants like beans and nuts; and foods that haven't been very processed, we can nourish our body and the world. Let's keep ourselves and our environment healthy!

Challenge

At dinner tonight think about how your food got to your plate.

Additional Activities

1. **Optional Transportation Section**

- Next, we're going to talk about another step in the food system: transporting. Usually foods aren't grown right next to our houses, so we have to transport them by car, truck, plane, train, or boat to get them from where they're grown to where they're eaten. What do we need in order to make a car go or to make a plane fly? Gasoline! Is it good for the environment to use a lot of gasoline? No, it causes pollution.

Show image of fruiting peach trees in summer and bare peach trees in winter.

- One way to make sure our food doesn't have to be transported too far is to eat in season. What's growing on this tree? That's right, peaches! Can peach trees grow in North Carolina? Yes, they can! What time of year do you think this picture was taken? Probably spring or summer.
    - What will that tree look like in the winter? Here's a picture of peach trees in North Carolina in January. Do you see any peaches growing? No! So if I buy a peach at the grocery store in January, does it come from North Carolina? No, chances are it comes from Chile. Does anyone know where that is? That's right, South America. When it's winter in North Carolina, what season is it in Chile? Notice that it's in the Southern hemisphere. It's summer! So during the time that peaches aren't growing in North Carolina, they will grow in Chile, and we can import them.
- If you want to try to eat foods in season, grown in North Carolina or close by, this chart is a handy guide. What's a food that's in season right now?

Show image of "What's in Season" chart for NC.

- Regardless of season, some foods always travel a long way. For example, there isn't a "banana season" in North Carolina; this just isn't a place where bananas grow well! Same with chocolate, coffee, and many other foods. Here are the distances that some of our foods may travel to get to our plates from the places where they're often grown or raised.

Show image of how far popular foods travel to get on our plate in NC.

- It is estimated that the average American meal travels about 1500 miles to get from farm to plate. Why is this cause for concern? There are many reasons:
    - This long-distance, large-scale transportation of food consumes large quantities of fossil fuels. Transporting food over long distances also generates great quantities of carbon dioxide emissions. Some forms of transport are more polluting than others. Airfreight generates 50 times more CO2 than sea shipping. But sea shipping is slow, and in our increasing demand for fresh food, food is

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increasingly being shipped by faster - and more polluting – means. (http://www.cuesa.org/learn/how-far-does-your-food-travel-get-your-plate).

Taste Test Ideas

- Hummus
- Black bean and mango salsa
- Edamame

Student Handouts

- Reflection Journal Question: What did you learn today that surprised you?

Parent Handouts

- Today in Nutrition Class…MyPlate, MyPlanet

Lesson Roadmap

- Food Web
- The Food System – Steps of a Food System
    - Growing
    - Processing
    - Disposing
- Wrap-up
- Taste-test

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