

2.4

Grade Level

6-9

Subjects

Health
Science

Time Frame

Multiple Class
Periods

Teacher Materials

- Nutrition Label Image
- Native Foods Case Study Notetaker
- Social Media Posts

Native Foods Case Study

Students use their understanding of nutrition to design a series of meals for a young person around their age. Students begin to consider issues around food access and provide advice about making healthy food decisions.

Teacher Background

The beginning of this lesson introduces students to the design of a **nutritional label**. While not all foods, and especially many whole, Indigenous foods included in a Native diet, will have a nutritional label attached, building student awareness of nutrition enhances their ability to make personal decisions regarding food.

The majority of this lesson asks students to read, analyze, and provide advice for a fictionalized teen, to whom many students may relate.

Cordelia, the case study subject, is a young girl who has just learned that her mother has **Type 2 Diabetes**. Grappling with the fact that diabetes is common in her community, and that the eating and lifestyle habits she shares with her mother may increase her chances of getting Type 2 Diabetes herself, Cordelia begins to examine her own choices around food and exercise.

Over the course of the case study, students examine Cordelia's diet, learn about the major influences in her life, and make suggestions as to how Cordelia can begin to lead a healthier lifestyle.

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Healthy Ecosystems Feed Healthy Communities

Vocabulary

- **Indigenous:** Produced, growing, living, or occurring natively or naturally in a particular region or environment.
- **Food Sovereignty:** To achieve independence in terms of the production and provision of food. Communities who achieve food sovereignty grow, distribute, and consume their own food from their own food sources.
- **Endangered Species:** A species that is at risk of becoming extinct or completely disappearing.
- **Nutrition:** Related to eating foods that provide the nutrients needed to live. Nutrients found in food and drink help provide energy to the body.
- **Indigenous Foods:** Locally grown food that is originally from the area and has been eaten by Native people for thousands of years. Food is grown with no chemicals or pesticides; food is grown in just the right amount.
- **Settler/introduced Foods:** Foods that come from other countries or from outside the local ecosystem. Foods are sometimes healthy and sometimes damaging to health. Sometimes these plants can harm the local ecosystem.
- **Processed Foods:** Foods that have been altered or changed from their original form. They often have added flavors, or artificial substances added, and might taste much different than their original form
- **Whole Foods:** Foods that have very little, or no processing/have not been changed from their original form. Foods that do not have additives, or any artificial substances added.

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Engage

Distribute **Cordelia's Social Media Posts** throughout the class, so that each student has one image.

Provide students with the **Native Foods Case Study Notetaker** and direct students to **STEP 1: Gathering Information**.

Ask students to get out of their seats and move about the room when they hear music playing. Once the music stops, students pair up with the person closest to them. Students should be paired with someone with a different image than themselves, and that has an image they have not yet seen.

With their partner, have students share their image and use the information to try to fill in answers for the questions on **STEP 1: Gathering Information** of their **Native Foods Case Study Notetaker**

STEP 1:

Gathering Information questions:

1. **What kinds of snacks does this teen eat?**
2. **What kinds of exercise does this teen enjoy?**
3. **What kinds of activities does this teen do with their friends?**
4. **What food-related activities does this teen do with her family?**
5. **Where does this teen get most of her food?**
6. **What kinds of beverages does this teen enjoy?**

Wrap up:

1. **Describe Cordelia's eating habits.**
2. **Describe Cordelia's interests and activities.**

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Explore

Continue to introduce Cordelia to the class by reading her **Blog Post #1** with students.

The blog posts included in the student packet have information about Cordelia's mother's health, Cordelia's relationship with her mother, and Cordelia's concerns about being at higher risk of developing diabetes due to her and her mother's eating habits.

The case study references the **My Plate activity** information that students explored in the **previous lesson**. Students continue to build an understanding of healthy eating and proportion control here.

Explain

Explain to students that they, using the information they already know about nutrition and healthy eating, are going to support Cordelia by designing a healthy food plan for her and her family.

First, ask students to identify the difference between:

1. **Whole foods vs. processed foods**
2. **Indigenous foods vs. introduced foods.**

Now, ask students:

3. **which types of foods are often the healthiest for us, and why.**

Clarify for students that when designing a healthy meal, it is important to consider how many whole vs. processed foods are included, and of those foods, which ones are Indigenous to our region, which ones have been introduced and may have been grown in a harmful way, and which ones have been imported from far away.

Based on our previous lessons, we know that meals with a majority whole foods are best for our bodies, and Indigenous foods grown in a responsible way are the best for our environment.

Before learning more about Cordelia and designing her meal plan, students first need to know how to read a **nutrition label**.

Explain that most processed foods have a nutrition label attached to them, but some whole foods, like fresh, unpackaged fruits,

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veggies, and nuts, may not have a label. There are lots of nutrition apps and websites that do provide nutritional information for whole foods, with one included in this lesson.

Project the **Nutrition Label image**.

Walk students through each annotated section, reviewing the purpose of each element.

Elaborate/ Extend

Organize students into groups of 3

Guide students to **STEP 2: Food Diary** section of the **Native Food Case Study Notetaker**.

As a class, read Cordelia's **Blog Post #2**.

Assign student in the group of 3 two meals to analyze. Students may refer to the **Nutrition Label image** and information.

Have students analyze the nutritional content of their two meals using the **Food Diary Notetaker**.

Once students finish their independent work, have groups share their information. As a class students add up the total servings of protein, grains, fruits, vegetables, and total calories, saturated fat, sodium, and added sugar for Cordelia's entire day.

As a class, have students determine whether Cordelia met, exceeded, or ate below the suggested servings for each category.

Evaluate

In their groups of 3, guide students to **STEP 3: Making a Plan** of the **Native Food Case Study Notetaker**.

STEP 3: Making a Plan asks students to use the **neighborhood map** to design an improved healthy eating plan for Cordelia. The plan encourages eating a wide variety of healthy foods that promotes whole and Indigenous or local food options.

Have students read **Blog Post #3** and create a meal plan. Once students complete their meal plan, have students respond to Cordelia's **original blog post**, providing advice and reasoning as to how Cordelia can improve her nutrition and health.

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Lesson Resources

Supporting resources for educators:

- **Indigenous foods and health:** <https://nicoa.org/wp-content/uploads/2016/07/Indigenous-Foods-A-Path-to-Heathy-Living.pdf>
- **Historical Trauma and negative health outcomes:** <https://ncsacw.samhsa.gov/resources/trauma/Tribal-families-and-trauma-exposure.aspx>
- **Historical Trauma and diabetes:** <https://kuscholarworks.ku.edu/handle/1808/10272>

Sources:

- USDA My Plate Nutritional Breakdown
- USDA Food Nutritional Breakdown: <https://fdc.nal.usda.gov/fdc-app.html#/food-details/826128/nutrients>
- [Oxford Dictionary](#)
- [Dictionary.com](#)



Native Food Case Study

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Learning Standards

CA Content Standard

California Health Standards

1.1.N Describe the short- and long-term impact of nutritional choices on health.

1.2.N Identify nutrients and their relationships to health.

1.5.N Differentiate between diets that are health-promoting and diets linked to disease.

1.10.N Identify the impact of nutrition on chronic disease.

4.1.N Demonstrate the ability to use effective skills to model healthy decision making and prevent overconsumption of foods and beverages.

5.1.N Use a decision-making process to evaluate daily food intake for nutritional requirements

7.1.N Make healthy food choices in a variety of settings.

Common Core:

CCSS.ELA-LITERACY.RI.7.1

Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

Cordelia's Social Media Posts



Cordelee_uhh



Cordelee_uhh Favorite meal
with my favoriet gals!

@knee.nah.pup

@Syl.bill.pup



Cordelee_uhh



Cordelee_uhh All Day I Dream
About Soccer!!!!

Cordelia's Social Media Posts



Cordelee_uhh



Cordelee_uhh What's your favorite soda? I can't go a day without a cherry coke!



Cordelee_uhh



Cordelee_uhh Farmer's Market Friday with mom dad and sis. So happy Rainer cherries are back! Thinking about trying that asparagus tho. What do ya'll think?

Cordelia's Social Media Posts



Cordelee_uhh



Cordelee_uhh favorite nap spot
after a long day of soccer practice
<3



Cordelee_uhh



Cordelee_uhh Homemade
pizza with the fam <3

Cordelia's Social Media Posts



Cordelee_uhh



Cordelee_uhh working on
the class project with the
bestie <3
@syl.bill.pup



Cordelee_uhh



Cordelee_uhh Earned a special
treat after getting an A on my Math
test!!! 100 100 100
@toomanycookies

Cordelia's Social Media Posts



Cordelee_uhh



Cordelee_uhh name a more iconic duo



Cordelee_uhh



Cordelee_uhh

harry potter ✓

yummy drink ✓

cozy room ✓

good times ahead ✓✓✓✓

Nutrition Label Breakdown

Name: _____

FACT SHEET 13

NUTRITION FACTS LABEL

Most prepared foods, such as breads, cereals, canned and frozen foods, snacks, desserts, and drinks, are required to have nutrition facts labels on their packages. These labels provide a wealth of information that can help you eat better and be healthier. Each label follows a standard format and provides the same information.

Serving Size

It's important to pay attention to the serving size and compare it with how much you eat of the food. If you were to eat 2 cups of this product, you would be consuming double the amount of calories and nutrients listed here.

Nutrition Facts

Serving Size 1 cup (228g)
Servings Per Container 2

Amount Per Serving

Calories 250 Calories from Fat 110

% Daily Value*

Total Fat 12g 18%

Saturated Fat 3g 15%

Trans Fat 1.5g

Cholesterol 30mg 10%

Sodium 470mg 20%

Total Carbohydrate 31g 10%

Dietary Fiber 0g 0%

Sugars 5g

Protein 5g

Vitamin A 4%

Vitamin C 2%

Calcium 20%

Iron 4%

* Percent Daily Values are based on a 2,000 calorie diet.
Your Daily Values may be higher or lower depending on your calorie needs:

Calories

This section provides the number of calories in a serving, as well as how many of these calories are from fat. In this example, 44% of the calories are from fat. *In general, 40 calories is considered low, 100 calories is moderate, and 400 calories or more is high.*

Nutrients

This section tells you how much nutrients are in the product. In general, you should limit the amount of fat, cholesterol, and sodium that you eat and make sure that you get enough dietary fiber, vitamins, and minerals.

Percent Daily Value

This tells you what percentage of the daily recommended allowance for each nutrient is provided by this food (based on a 2,000 calorie daily diet). *In general, 5% DV or less is considered low and 20% DV or more is considered high.*

In this example, eating the entire package (two servings) would mean that you had consumed 36% of your recommended fat intake for the entire day—in just one sitting!

Footnote

While all nutrition label values are based on a 2,000 calorie diet, you can still use the Percentage Daily Value (%DV) as a frame of reference whether you consume more or less than 2,000 calories.

Source: U.S. Food and Drug Administration, *How to Understand and Use the Nutrition Facts Label*, 2004.
Online at <http://www.cfsan.fda.gov/~acrobat/foodlab.pdf>.

Name: _____

Date: ____/____/____

Native Foods Case Study Notetaker

STEP 1: Gathering Information

1. What kinds of snacks does this teen eat?
2. What kinds of exercise does this teen enjoy?
3. What kinds of activities does this teen do with their friends?
4. What food-related activities does this teen do with her family?
5. Where does this teen get most of her food?
6. What kinds of beverages does this teen enjoy?

Name: _____

Date: ____/____/____

Wrap up:

1. Describe Cordelia's interests and activities.
2. Describe Cordelia's eating habits. What kinds of foods does she seem to enjoy?

STEP 2: Food Diary

Cordelia's Blog #1: Making Some Changes

Hey Fam,

So, I've been going with my mom to her doctor's appointments lately. The doc talks a lot about her type 2 diabetes and all the environmental things that cause it that are out of her control. The doctor ALSO says that one of the most important things she can control is how she EATS! I can't believe it. I always kind of knew food was related to diabetes but if my mom isn't eating right, neither am I! We eat together for breakfast and dinner and we eat basically the same things. Sooo, I guess I am basically going to get Type 2 Diabetes in the future unless my mom and I make changes now! According to her doctor, if mom changes her diet she could keep her symptoms from getting really bad and if I make changes now I can reduce my chance of getting it altogether!

I gotta make some changes to my diet if I don't want Type 2 diabetes! Help me Fam, you're my only hope!

Native Foods Case Study

Name: _____

Date: ____/____/____

Cordelia's Blog #2: Here's the situation.

Hey Fam,

Here's the situation I am dealing with. My mom has Type 2 Diabetes, and I am really trying to avoid getting it myself. The doctor told me I need to make sure I am eating healthy and avoid super processed sugars and fats, but....they're SO GOOD! The chips! All the fried things!

Anyways, I kept track of all my meals and snacks for the day (doctor's orders), and this is what I came up with:

- **Breakfast:** 2 cups of frosted flakes with 1 cup of whole milk and a cup of coffee with 2 Tbs of creamer and 1 Tbs sugar
- **Snack:** 1 1oz bag of Fuego Takis
- **Lunch:** 1 slice of pepperoni pizza with an 12oz can of cherry coke
- **Snack:** 1 apple
- **Dinner:** 1 KFC famous bowl
- **Dessert:** 2 KFC cookies

Tasty, right?!

I also went to the **USDA My Plate Planner** and this is what it told me to eat everyday.

- **Total Calories:** 2000
- **Fruits:** 2 cups
- **Vegetables:** 2 ½ cups
- **Protein:** 5 ½ ounces
- **Grains:** 6 ounces
- **Sodium:** less than 2,200 milligrams
- **Saturated fat:** less than 22 grams
- **Added sugars:** less than 50 grams

I'm not going to lie, I think I probably went over these guidelines by like, A LOT, but I also don't totally understand what a meal plan that meets these guidelines even looks like. What am I supposed to eat?!

Native Foods Case Study

Name: _____

Date: ____/____/____

Directions: In groups of 3, split the foods in the 2 meals you were assigned between group members. Write the foods each group member was assigned below.

Student 1: _____

Student 2: _____

Student 3: _____

On a separate sheet of paper each group member should record the total calories, sodium, saturated fat, and added sugar content of their assigned foods.

Once all group members have the nutritional breakdown for their foods, add up the nutritional totals for calories, sodium, saturated fat, and added sugars.

Group Totals

Total Calories:

Total sodium:

Total saturated fat:

Total added sugars:

Decide with your group how many servings of fruits, vegetables, protein, and grains were included in Cordelia's meals.

As a reminder:

- 1 serving of protein is about the size of a deck of cards.
- 1 serving of fruit or vegetables is about the size of a tennis ball.
- 1 serving of grains is about the size of a fist.

Group Totals

Servings of Fruit:

Servings of Vegetables:

Servings of protein:

Servings of grains:

Native Foods Case Study

Name: _____

Date: ____/____/____

STEP 3: Making a Plan

Cordelia's Blog #3:

Hey Fam,

Clearly my diet has been pretty unhealthy for a long time. I didn't realize it before, but now that I am seeing the ways that Type 2 Diabetes is impacting my mom, I understand that I need to change my habits. The thing is, I am not sure where to start. I know there are some places to buy food around my neighborhood, but when I go to them, everything seems unhealthy and processed. Can you help me figure out where to go and what to buy?



Native Foods Case Study

Name: _____

Date: ____/____/____

Using the map of Cordelia's neighborhood for ideas, design a menu for Cordelia that reduces her chances of developing **Type 2 Diabetes, high cholesterol, and heart disease** using the resources available to her and making sure her diet is diverse and good for her local ecosystem. Make sure she is meeting the nutritional guidelines laid out for her in the **USDA My Plate Planner**.

- Breakfast:
- Snack:
- Lunch:
- Snack:
- Dinner:
- Dessert:

List out how many servings of each food she would eat if she used your menu.

- Total Calories: ____
- Fruits: ____ cups
- Vegetables: ____ cups
- Protein: ____ ounces
- Grains: ____ ounces
- Sodium: ____ milligrams
- Saturated fat: ____ grams
- Added sugars: ____ grams

In 3-5 sentences, write a response to Cordelia's Blog Posts with your recommended meal plan and explain why it is a healthier option.

Name: _____

Date: ____/____/____

California Indigenous Foods

Below is an incomplete list of foods Indigenous to California. All Tribal communities have different traditions and norms regarding what they eat, how, and when. Just because one tribe consumes one food does not necessarily mean another tribe does.

Fruits and Vegetables:

tarweed
wild grapes
cacti
cherries
wild plums
wild strawberries
wild raspberries
wild blackberries
wild apricots
thimbleberries
sourberry
Manzanita
California fan palm
prickly pear cactus
elderberry
huckleberry
wild onion
agave
yucca
Dandelion
wild celery
clover
cattail
milkweed
Indian rhubarb
Watercress
water parsley
bracken fern

Proteins:

walnut (fat, protein)
hazelnut (fat, protein)
buckeye (fat, protein)
acorn (fat, protein)
pine nut (fat, protein)
deer
elk
antelope
mountain sheep
quail
grasshoppers
salmon
mussels
seaweeds
clams
scallops
trout
sturgeon
abalone

Grains and starches:

brome grass (carb, whole wheat)
oats (carb, whole wheat)
ricegrass (carb, whole wheat)
chia seeds
Buckwheat
Bear-grass
yampah

Name: _____

Date: ____/____/____

Indigenous Recipes- Menu Inspiration

- <https://cooking.nytimes.com/68861692-nyt-cooking/17462786-sean-shermans-10-essential-Native-american-recipes>
- <https://www.indigikitchen.com/recipes/>
- <https://www.littlethings.com/Native-american-recipes/3>

Name: _____

Date: ____/____/____

Nutritional Breakdown of Cordelia's Food Diary• **Breakfast:**

- 2 cups of frosted flakes

Total Calories	Servings of Fruit	Servings of Vegetables	Servings of Protein	Servings of Grain	Total Sodium	Total Saturated Fat	Total Added Sugar
280	0	0	0	2	400mg	0g	28g

- 1 cup of whole milk

Total Calories	Servings of Fruit	Servings of Vegetables	Servings of Protein	Servings of Grain	Total Sodium	Total Saturated Fat	Total Added Sugar
150	0	0	0	0	120mg	5g	0g

- We are not considering milk as a source for protein in this case but if you wish to include it, 1 cup of milk is ~1 serving
- The sugar in whole milk is natural
- 1 cup coffee

Total Calories	Servings of Fruit	Servings of Vegetables	Servings of Protein	Servings of Grain	Total Sodium	Total Saturated Fat	Total Added Sugar
1	0	0	0	0	6mg	0g	0g

- 2 Tbs of creamer

Total Calories	Servings of Fruit	Servings of Vegetables	Servings of Protein	Servings of Grain	Total Sodium	Total Saturated Fat	Total Added Sugar
50	0	0	0	0	0mg	3g	6g

- 1 Tbs sugar

Total Calories	Servings of Fruit	Servings of Vegetables	Servings of Protein	Servings of Grain	Total Sodium	Total Saturated Fat	Total Added Sugar
49	0	0	0	0	0mg	0g	13g

Name: _____

Date: ____/____/____

- **Snack:**

- 11oz bag of Fuego Takis

Total Calories	Servings of Fruit	Servings of Vegetables	Servings of Protein	Servings of Grain	Total Sodium	Total Saturated Fat	Total Added Sugar
140	0	0	0	1-2	390mg	2.5g	0g

- **Lunch:**

- 1 slice of pepperoni pizza

Total Calories	Servings of Fruit	Servings of Vegetables	Servings of Protein	Servings of Grain	Total Sodium	Total Saturated Fat	Total Added Sugar
313	0	0	.5-1	1-1.5	760.4mg	5.7g	3.6g

- 12oz can of cherry coke

Total Calories	Servings of Fruit	Servings of Vegetables	Servings of Protein	Servings of Grain	Total Sodium	Total Saturated Fat	Total Added Sugar
150	0	0	0	0	35mg	0g	42g

- **Snack:**

- 1 apple

Total Calories	Servings of Fruit	Servings of Vegetables	Servings of Protein	Servings of Grain	Total Sodium	Total Saturated Fat	Total Added Sugar
130	1	0	0	0	0mg	0g	0g

- **Dinner:**

- 1 KFC famous bowl

Total Calories	Servings of Fruit	Servings of Vegetables	Servings of Protein	Servings of Grain	Total Sodium	Total Saturated Fat	Total Added Sugar
740	0	1-1.5 (corn+ mashed potato)	1 (popcorn chicken)	0	2350mg	6g	2g

Native Foods Case Study

Name:_____

Date: ____/____/____

- **Dessert:**

- 2 KFC cookies

Total Calories	Servings of Fruit	Servings of Vegetables	Servings of Protein	Servings of Grain	Total Sodium	Total Saturated Fat	Total Added Sugar
480	0	0	0	2	280mg	12g	48g