LESSON OUTLINE

Lesson #1: **Feed Your Engine Proteins, Fats and Carbohydrates**

Lesson Objective: **Children learn that proteins, fats and carbohydrates are the foods that fuel their bodies.**

Classroom Lesson Outline:

1. Introduction *5 minutes*
- a. Similarities between cars and people
- b. Student Playacting: Driving to _____ (someplace fun – amusement park, beach, vacation)
  fill in the blank

2. Proteins, fats and carbohydrates (P, F, C) *25 minutes*
- a. It takes a combination of P, F, Cs to help us perform at our best
- b. Breaking down P, F, Cs into smaller categories
  - i. Proteins
    1. Dairy and animal proteins
    2. Vegetable proteins
  - ii. Carbohydrates
    1. Grains
    2. Fruits and vegetables
  - iii. Fats
    1. Beneficial
    2. Harmful
- c. Interactive worksheet
  - i. Star activity sheet

3. Review *5 minutes*

4. Optional Food Sample – part of Star Activity

Recommended Reading

- Lesson review *(For 4th and 5th grade docents)*
- Meat, vegetable and dairy proteins
- Vegetable and fruit, grain carbohydrates
- Beneficial fats *by Linda Prout, MS*

(For all new docents)

Optional Reading for students
- Dinosaurs Alive and Well, *Laurie Krasny Brown and Marc Brown*
- This Is The Way We Eat Our Lunch, *Edith Baer*

California State Standards met by grade

3rd grade:
Physical sciences
1. Energy and matter have multiple forms and can be changed from one form to another. As a basis for understanding this concept:
   - a. Students know sources of stored energy take many forms, such as food, fuel, and batteries.

4th grade:
Life sciences
2. All organisms need energy and matter to live and grow. As a basis for understanding this concept:
   - a. Students know plants are the primary source of matter and energy entering most food chains.

5th grade
Science investigation and experimentation
3. Scientific progress is made by asking meaningful questions and conducting careful investigations.
As a basis for understanding this concept:
   - a. Students will: Write a report of an investigation that includes conducting tests, collecting data or examining evidence, and drawing conclusions.

SCRIPT

Lesson #1:
Feed Your Engine: Proteins, Fats and Carbohydrates

Docent Note: Hand out star activity for use later in the lesson and draw the 5 point star on the board and label each point. It should look just like the student handout.

Introduction

(Lead-in)

Hello, I'm _____, I will be your GrowingGreat docent this year.

GrowingGreat will be teaching you about NUTRITION and how to make BETTER FOOD CHOICES during five lessons this year.

It is our goal that throughout these lessons, you will start to:

- Understand that food is our fuel that keeps us performing at our best
- Make little steps towards changing the foods you choose to eat
- Try new foods that are higher in quality

I will be teaching you a lot of great information in a short amount of time so I really need your cooperation.

Docent Note: Review with students your expectations of their behavior

In today's lesson you will learn to identify the three types of "fuel" your body's "engine" needs to perform at its best.

Question: When I say the words "fuel," and "engine" what is the first thing you think of?

Answer: A car

Question: What do your parents pump into their car to make its engine RUN?

Answer: Fuel or gas

Right. Your parents pump in only one type of fuel, the type of fuel their car was designed to take.
Ok, I need four volunteers who like to act.

Docent Note: call on four volunteers and ask them to bring their chairs up to the front of the room. Arrange the chairs in pairs, as if they are a car with two chairs in the front and two chairs in the back of the car. Instruct volunteers to sit down in the chairs and name the person in the "driver's seat" the driver.

Docent Note: Ham this up, Encourage them to act like they are in a car. Pretend to buckle seat belts. Pretend to be steering the car and driving down the road.

Today we are driving to _____. (Someplace fun – amusement park, beach, vacation)
fill in the blank

Okay, buckle your seat belts and let's get going.

Docent note: Give them a minute to let them act out driving down the road.

Oh no, the red light on your gas gauge just came on! You are running out of gas! You aren't going to make it to _____!
fill in the blank

Question: What do you need to do?
Answer you want from volunteers: Get to a gas station.
Your car needs enough fuel to take you where you need to go.

Docent note: Instruct driver to mimic finding a gas station, turning in, turn off the car, exit the car.

Good job, you made it to the gas station, before you ran out of gas (sigh of relief).

But your adventure doesn't end there. Now you are faced with some choices of different types of gas for your car.

Docent note: point to the three different gas cans.

Question to "driver:" Can you tell me how many choices you have?
Answer: You have a choice of three different types of gas: regular, unleaded or diesel.

But you have to make the right choice for your car because each car is designed to take only one type of fuel, either regular, unleaded or diesel.

Question to the class: What might happen to this car if (driver's name) mistakenly fills the car up with diesel but it was built to take regular?

PROP *Docent note: use gas cans to illustrate this to the class*

Answer: It could break down, sputter, not get very far.

Question: Will they make it to _____ if they choose the wrong fuel?
fill in the blank
Answer: No (possibly not).

Question: OK (driver volunteer), what kind of fuel does your car take?
Answer: Choose one: regular, diesel or unleaded


PROP *Docent note: instruct "driver" to select their choice of fuel and pretend to fill up the car.*

Excellent! Now our car is fueled up with the type of fuel it needs and is ready to go.


Docent note: Thank volunteers and have them return to their seats, taking their chairs.

Just like the car needs fuel as its energy source to run, our bodies need fuel to give us an energy source to run.

Now we know that cars run on a single type of fuel, the fuel it was designed to take.

Question: What do we call the fuel we use to make our engines run? What gives us our energy to get up and go everyday?

Answer: FOOD!

Our body is a lot like a car. We need to put certain fuels into our engines everyday to make us go. These fuels give us energy and help us think and perform at our best ALL DAY LONG.

Like the car, our bodies also have a choice of three types of fuel. But UNLIKE the car, we can't choose just one type of fuel. We need to eat a COMBINATION of three different types of fuel to run at our best every day.

These three different types of fuel are called proteins, fats and carbohydrates. We'll start calling these P, F, Cs for short.

Take a look at the star on your handout. Each point on the star is labeled as a protein, a carbohydrate or a fat.

There are a lot of foods that make up the protein and carbohydrate categories, the two types of foods that make up the majority of what you eat everyday. Because there are so many different kinds of protein and carbohydrate foods, we broke each down into two categories.

We are learning about these different categories of foods because to stay healthy you want to eat a wide variety of foods every day. Each food has different nutrients such as vitamins and minerals that are good for you. You can get all the nutrients you need to stay healthy by eating a wide variety of foods.

Let's start with proteins; these are our GROW foods. Go ahead and write "Grow Foods" on the line in both protein sections.


Docent note: Demonstrate this by writing on the board in the star you drew on the board.

Proteins help our muscles and tissues grow. They also help our brains think clearly.

To eat a wide variety we need to be familiar with the many different kinds of proteins available.

Question: Looking at your Star Chart, who can tell me the two different categories of proteins?
Answer: Either dairy proteins (such as milk or cheese) or animal and vegetable proteins (such as chicken or beans)

Question: Who can give me an example of a dairy protein?
Possible answers: Milk, cheese, yogurt

Docent note: Write their choices on the board.

Question: Any ideas of how dairy foods benefit our bodies?
Answers:

- They have calcium, which is good for our bones.
- They also have vitamins which are very important for our growing bodies, like vitamin D. Vitamin D also helps us grow strong bones.
- Dairy proteins, such as cheese, also help us to feel full longer, so we eat less often.

Let's move on to the other type of proteins: animal and vegetable.

Question: Who can give me an example of an animal protein?

Docent note: Write their choices on the board. Make sure to write down answers such as: fresh chicken, fish, beef, lamb, turkey, pork, eggs.

Animal proteins do a lot for our bodies. They:

- Provide many vitamins.
- Help our muscles grow strong so we can play.
- They also keep us feeling full for a long time.

Question: Does anyone know what a vegetarian doesn't eat?
Answer: A vegetarian is a person who chooses not to eat any meat from an animal.

But it is still important to eat protein even if you don't choose to eat any animal protein.

Question: Who can name a non-meat protein, in other words, a vegetable protein?

Docent note: Write their choices on the board and make sure to include beans, like black beans or pinto beans, soy beans, tofu, nuts and seeds,

Vegetable proteins are great and you don't need to be a vegetarian to eat them. In fact, because each different type of protein does great things for our bodies, you should try to include different kinds of proteins every day. Remember, proteins are our GROW foods.

Now we are going to talk about carbohydrates. These are our GO foods; they give us quick and lasting energy. Go ahead and write "GO Foods" on the lines next to both places on your Star Chart that say carbohydrates.

Docent note: Demonstrate this on the board on your star.

These are also a big category which we can break down into whole grains or starches and fruits or vegetables.

Question: Who can tell me what a grain is?
Answer: Grains are the seed part of certain plants which we use to make a lot of different foods. For example, whole wheat is a grain. Millers take the seeds from the wheat plant and grind them up into flour which bakers use to make bread and a lot of other foods.

Question: Can anyone else name some different types of grains and the foods we might make from them?
Answer: Corn = tortillas; corn = polenta; oats = oatmeal; wheat = flour tortilla etc.

Docent note: Write their choices on the board.

Grains are used to make many different carbohydrate foods we eat everyday, such as pasta, tortillas, crackers, bread and even treats such as cookies and cakes.

Whole grains are great for us to eat because they give us long lasting energy to make us feel great all day long.

There are also other types of carbohydrates that give us great energy.

Question: Who can give me an example of a fruit carbohydrate?
Answers: Apples, oranges, melons, grapes, kiwi, tangerines…

Docent note: Write their choices on the board.

Fresh fruits do a lot for our bodies too:
- They provide a great source of vitamin C. Vitamin C helps our immune system. Our immune system acts as our body's soldiers that defend us against and fight off sickness, keeping us strong and healthy.

Question: Now who can name some carbohydrates that are vegetables?
Answers: Broccoli, carrots, string beans, spinach, lettuce, kale, collard greens, potatoes, corn…

Docent note: Write their choices on the board.

Vegetables are also a great source of fiber and also contain many vitamins which help protect our bodies so they perform at their best.

To review, we have proteins that are our GROW foods, carbohydrates which are our GO foods.

Lastly, let's look at fats. Fats are a fuel we usually eat in small amounts.

Question: How many of you think fats are unhealthy for us to eat?

Docent note: Get a show of hands

Well, it is true some fats can be very harmful to our bodies, but the fact is we NEED certain fats to help us think and perform at our best. Fats are our brain foods.

Write BRAIN FOODS on the line next to fats on your Star Chart.

The fats that help us, not harm us, are called beneficial fats.

Question: Who knows what beneficial means?

Answer: Beneficial means it is doing something good for your body.

In the right quantity, beneficial fats help our bodies and brains work properly. We will talk more about fats in future lessons.

Question: Who can give me an example of foods that contain fat?

Docent note: Write their choices on the board.

You all did a great job listing all these foods that contain fat. However not all of these foods contain beneficial fats.

Some examples of beneficial fats are avocado, nuts, butter, olive oil, some fish such as salmon, some dairy foods such as whole milk and cheese. A lot of these foods are also protein foods, so they can go in both categories. For example, nuts and cheese are high in both protein and fat.

Docent note: Write these examples on the board; if already on board, circle it.

Some examples of harmful fats are foods that are fried in highly-heated oil, like french fries, chips, doughnuts…

Question: Raise your hand if you have heard of hydrogenated oils or partially hydrogenated oils?

These are man-made oils that are very harmful for our hearts. Often if you read ingredient lists you will see these oils. Hydrogenated oils are used to preserve foods so they will last longer on the shelves at the grocery store.

Docent note: Star Chart Activity: There are two options to complete the Star Chart Activity; one with food, one without. If you <u>are</u> serving food in this lesson, pass out food sample plates and ask the students not to eat until you begin the activity. Use the food you are serving for the Star Chart Activity. If you are <u>not</u> serving a food sample, continue with the script as written.

Let's talk about a possible snack you could eat at home that includes Proteins, Fats and Carbohydrates.

As I introduce each food, write it in the appropriate category on your Star Chart.

Docent note: to make this more interactive you can suggest working with their seat partner to come up with answers. Encourage them to write the answers in the correct category.

Let's pretend we are having a snack of a whole grain cracker, cream cheese, cucumber, and apple.

Docent note: If serving food, change the questions and answers below to reflect the food sample you are serving.

First we have a whole grain cracker..

Question: Raise your hand if you know where this belongs?
Answer: Grain carbohydrate.

Write that down on your Star Chart on the line under where it says grain carbohydrate.

On the cracker is spread some cream cheese.

Question: Raise your hand if you know where cream cheese belongs on the chart?
Answer: Dairy protein and fat.

Write cream cheese on your Star Chart on the line under where it says dairy protein. Cream cheese also contains beneficial fat, so also write it on your Star Chart where it says fats.

On top of the cream cheese is a slice of cucumber.

Question: Where does the cucumber belong on the chart?
Answer: Vegetable carbohydrate.

Docent note: botanically, a cucumber is a fruit, but we recognize it as a vegetable.

Write that down on your Star Chart on the line under where it says vegetable carbohydrates.

Finally you have a slice of apple.

Question: Raise your hand if you know where that belongs.
Answer: Fruit carbohydrate.

Write that down on your Star Chart where it says fruit carbohydrate.

Let's review. Pair up with the person next to you and see if you remember what you learned today.

I am going to read the questions on the back of your Star Chart. Talk over possible answers with your seat partner. Write the answers on the back of your Star Chart.

1. What 3 fuels do our bodies need to perform at our best?
    a. Answer: proteins, fats and carbohydrates
2. What is an example of an animal protein?
    a. Answer: any type of meat, eggs
3. What is an example of a grain carbohydrate?
    a. Bread, pasta, crackers, cookies, cakes…

4. What do we call a fat that is good for our bodies, not harmful?
    a. Beneficial

 *Docent note:* ***show them their Grill Me take-home flyer.*** *Encourage them to share it with their parents.*

That is our lesson for today. You did a great job and learned a lot. Thank you!