Lesson 5: Proteins

Activity Level: K-2 | Time: 45-60 minutes

PURPOSE

This lesson: Students will explore Nebraska’s protein production and discover the healthy benefits from our locally produced proteins.

Overview of Lesson Series: Students explore the five food groups and what state-grown foods fit into each group. This club makes a local connection to good nutrition and a healthy lifestyle.

NEBRASKA STATE STANDARD CONNECTION

Kindergarten:
- SC.K.7.2.C Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.
- PE.K.3.4 Communicates the importance of health-related fitness components and nutrition for physical activity.
- PE.K.3.4.a Recognizes that food provides energy for physical activity. (E)

1st Grade:
- SS 1.3.5.b Match resources to their sources (e.g., food from farms, wood from trees, minerals from the ground, fish from the sea).
- PE.1.3.4.a Differentiates between healthy and unhealthy foods. (E)

2nd grade:
- SS 2.2.2.a List various goods and services that can be produced with the same list of resources (e.g. soil, seed, and labor used to produce animal feed, plastics, cereal, or fuel).
- SS 2.3.4.b Identify patterns of land use (e.g., agricultural, residential, industrial, commercial, educational, recreational).
- PE.2.3.4.a Recognizes the impact of nutrition on physical activity. (E)

ACTIVITY SNAPSHOT

1. Organize and Prepare Supplies
2. Read Background Information
3. Interest Approach
4. Conduct Activities 1 & 2
5. Ask follow up questions and make the connection to agriculture
   - What food group did we explore today?
   - Do Nebraska farmers grow or raise proteins? If so, what are some examples of proteins that we grow or raise in Nebraska?
   - Why is protein important in our daily diet?
• How are all of these proteins connected to agriculture?
• What can we share with others about what we learned today?

MATERIALS
• Computer with PowerPoint Software
• Food Matters: Proteins PowerPoint
• Protein Source Search Cards
• 7 baskets, attach a picture of “Beef, Pork, Chicken, Soybeans, Dry Beans, Nuts” to each one of them

WHAT’S THE CONNECTION TO AGRICULTURE?
Nebraska grows and raises a variety of protein choices. Several of Nebraska’s top agricultural commodities fall into the protein category of MyPlate. For example, beef, soybeans, pork, eggs, and chicken are popular commodities that farmers grow and raise here in Nebraska.

PROCEDURES:
1. Organize and Prepare Supplies
   See “Materials” above.
2. Background Information
   Source: choosemyplate.gov and the Nebraska Department of Agriculture

There is a variety of different protein sources to choose from and many of those choices are grown or raised right here in Nebraska. Below are examples of protein choices one might chose to eat.

Beef: Nebraska ranks number two in the nation for cattle production. Beef cattle is the largest sector of agriculture in our state. Nebraska is known for its corn-fed beef that stands true to quality and flavor. A fun fact is cattle out number people in Nebraska four to one. Beef comes in a variety of different cuts of meat providing us with zinc, iron, and protein.

Pork: Nebraska’s pork industry plays an important role in our state’s economy. There are more than 3.1 million pigs in Nebraska. Nebraska ranks number six in the largest swine herd in the country. Today’s pork is 16 percent leaner and 27 percent lower in saturated fat compared to 26 years ago. There are eight cuts of pork that meet the USDA guidelines for lean meat.

Poultry: Most of Nebraska’s poultry are raised for laying hens which play an important role in supplying our state’s eggs. Nebraska ranks number 10 in egg production. Chickens are raised for meat, called broilers. Turkeys are also raised in Nebraska for meat.

Soybeans: Soybeans are Nebraska’s second largest harvested crop. Soybeans are processed for serval different uses including animal feed, human food products, and renewable fuels. Nebraska ranks number
five in the nation for soybean production. Livestock and poultry consume a majority of the soybeans grown in Nebraska. People who choose not to eat meat can enjoy soybean food products and still meet their needs for protein. Tofu and edamame are examples of soybean products.

**Dry Edible Beans:** Nebraska ranks number one in the nation for Great Northern bean production, second in the nation for pinto beans, and third in the nation for all dry edible beans. Dry edible beans provide a great protein alternative for meat.

**Fish:** Although raising fish in Nebraska isn’t as common, there are a few fish and shrimp farms located in Nebraska. Fish is a great source of protein in our diets. Containing a range of nutrients, notably the omega-3 fatty acids, EPA, and DHA. Examples could include salmon, anchovies, herring, sardines, oysters, trout, and mackerel.

All foods made from meat, poultry, seafood, beans and peas, eggs, processed soy products, nuts, and seeds are considered part of the Protein Foods Group. Beans and peas are also part of the Vegetable Group.

According to the USDA Dietary Guidelines, the recommended daily protein serving is 5-6 oz for children 4 to 13 years old.

**Health benefits:**

- Meat, poultry, fish, dry beans and peas, eggs, nuts, and seeds supply many nutrients. These include protein, B vitamins (niacin, thiamin, riboflavin, and B6), vitamin E, iron, zinc, and magnesium. Proteins function as building blocks for bones, muscles, cartilage, skin, and blood. They are also building blocks for enzymes, hormones, and vitamins. Proteins are one of three nutrients that provide calories (the others are fat and carbohydrates).
- B vitamins found in this food group serve a variety of functions in the body. They help the body release energy, play a vital role in the function of the nervous system, aid in the formation of red blood cells, and help build tissues.
- Iron is used to carry oxygen in the blood. Many teenage girls and women in their child-bearing years have iron-deficiency anemia. They should eat foods high in heme-iron (meats) or eat other non-heme iron containing foods along with a food rich in vitamin C, which can improve absorption of non-heme iron.
- Magnesium is used in building bones and in releasing energy from muscles.
- Zinc is necessary for biochemical reactions and helps the immune system function properly.
- EPA and DHA are omega-3 fatty acids found in varying amounts in seafood. Eating 8 ounces per week of seafood may help reduce the risk for heart disease.

What are the benefits of eating nuts and seeds?
Eating peanuts and certain tree nuts (i.e., walnuts, almonds, and pistachios) may reduce the risk of heart disease when consumed as part of a diet that is nutritionally adequate and within calorie needs. Because
Nuts and seeds are high in calories, eat them in small portions and use them to replace other protein foods, like some meat or poultry, rather than adding them to what you already eat. In addition, choose unsalted nuts and seeds to help reduce sodium intakes.

Vegetarian choices in the Protein Foods Group
Vegetarians get enough protein from this group as long as the variety and amounts of foods selected are adequate. Protein sources from the Protein Foods Group for vegetarians include eggs (for ovo-vegetarians), beans and peas, nuts, nut butters, and soy products (tofu, tempeh, veggie burgers).

3. Interest Approach (3-5 Minutes)
a. Review with students that our food comes from the farm and that farmers and ranchers grow our food. Food comes from either a plant or an animal.
b. Ask students to recall what they remember about grains.
   - What do grains give us? Nutrients such as vitamins and minerals and can help our bodies remain healthy and feel energized.
   - Should you eat grains every day? Yes, 5-6 oz.
   - Where do we grow grains grow? In farmers’ fields.
   - What are some grains that we grow in Nebraska? Corn, wheat, oats, sorghum.
c. Today we are going to explore the proteins portion of MyPlate.
d. Can anyone tell me what a protein might be?

4. Learning Activity 1 – Proteins PowerPoint (15-20 Minutes)
Source: choosemyplate.gov, Nebraska Department of Agriculture and the Eat Happy Project – YouTube
a. Slide 1 – Show students where protein is located on MyPlate (purple) and read the story about the Thorpe and Shelly Thompson farm on Nebraska’s MyPlate poster.
b. Slide 2 – Nebraska offers a variety of protein sources to choose from and many of those choices are grown or raised right here in our state. A few of those products include beef, pork, chicken, eggs, soybeans, and dry beans.
c. Slide 3 – Explain that our food products come from these animals or plants. Livestock animals serve a purpose in life to provide us with meat and it is an option we can choose to consume. If we choose not to consume meat we can get protein through plant-based products such as soybeans, dry beans, and nuts. These pictures are products that we raise right here in Nebraska.
d. Using the Protein Source Search Cards briefly explain to the students what each food product is and the source (animal/plant) it came from. This will help with the activity later. (Example, Hamburger comes from what animal? – A beef cow).
e. Slide 4 – Nebraska raises a variety of different proteins but there are some things that other states and countries can raise that we don’t, such as seafood, nuts, and seeds.
f. Slide 5 – Explain that the recommended daily serving of protein is 4-5 oz for kids ages 4-13 years old.
g. Slide 6 – This video explains the importance that protein plays for our body’s development and growth. Proteins are the building blocks for our bodies and provides us with nutrients such as zinc,
iron, and proteins that help build muscle and repair skin.
h. Slide 7 – Discuss/share the importance of keeping proteins safe when preparing it. 1) Keep meat away from fruits and vegetables until it is fully cooked. 2) Always have a clean surface to prepare your meat on. 3) Cook meat to proper temperatures.
i. Next, we are going to play a relay game to review our different protein products and match them to their source.

5. Learning Activity 2 - Protein Source Search
Source: Adapted from Utah Agriculture in the Classroom
a. Divide the class into two teams. Divide up the product pictures into the two groups, red or blue. You should have 16 pictures in each pile.
b. Take the students to the location of the relay race and place each team in a single file line. Be sure to have all the pictures face down in front of the first person in each line. Locate the baskets 20-50 feet away from the lines.
c. Give students the following instructions: “This is the source relay. Your job is to place each card in the basket representing the original source of the every day item that is pictured. When you are in the front of the line, pick up a card, look at the picture, then run to and place the picture in the correct basket based on the product’s “source”– either “Beef,” “Pork,” “Poultry,” “Fish,” “Soybean,” “Dry Bean,” or “Nuts.” The next person in line goes when the person in front of them returns and crosses over the start line or hand-tags them. The returning player should go to the end of the line.”
d. Ask students if they have any questions and clarify as needed. Begin the relay race and continue until all of the pictures have been sorted. The first team to finish the sort wins temporarily, but the ultimate winner will be determined by accuracy.
e. After the relay is over and the pictures are sorted, return to the classroom or have the students gather around you in a suitable location to go through the cards and discuss the correct answers. As you hold up each picture, the students can show whether they agree or disagree with the sort using the “thumbs up” or “thumbs down” signal, or another response as chosen. Use the attached Protein Source Search sheet for the correct answers and explanations for each card. If you choose to keep score to identify a winner, tally the number of cards in the correct boxes for each team.

6. Ask Follow Up Questions and Make the Connection to Agriculture (3 -5 Minutes)
• What food group did we explore today?
  Protein.
• Do Nebraska farmers grow or raise products that make up proteins? If so, what are some examples of protein that we grow or raise in Nebraska?
  Beef, Pork, Chicken, Soybeans, Dry Beans, Eggs.
• Why is protein important in our daily diet?
  Protein is important for our bodies because it helps builds bones, muscles, and supports our skin and blood. Most protein contains the essential nutrients called ZIP (zinc, iron, and protein).
• **How are all of these proteins connected to agriculture?**
  Nebraska produces several different protein products whether its plant based, or animal based. All food comes from the agriculture industry and Nebraska is proud to provide a vast variety of proteins that are locally grown or raised right here in Nebraska.

• **What can we share with others about what we learned today?**
  Protein is important to our diets just like the other food groups are. Nebraska produces several choices of proteins that we can choose from to include in our diets for our bodies to remain healthy.
Protein Source Search

Soybeans

Beef Cow
Protein Source Search

Pork

Chicken
Protein Source Search

Fish

Dry Beans
Protein Source Search

Nuts
Lesson 5: Proteins

Steak

Beef Jerky
Lesson 5: Proteins

Roast Beef

Hamburger
Chicken Breast

Chicken Nuggets
Chicken Wings

Eggs
Lesson 5: Proteins

Tofu

Edamame
Lesson 5: Proteins

Black Beans

Refried Beans
Lesson 5: Proteins

Salmon

Tuna
Cod

Almond
Lesson 5: Proteins

Pistachios

Walnuts
Pork Chop

Ham
Lesson 5: Proteins

Bacon

Pork Sausage
Lesson 5: Proteins

Pepperoni

Pulled Pork
Lesson 5: Proteins

Hot Dog

Pork Ribs