NEBRASKA
AGRICULTURE
IN THE CLASSROOM
NEBRASKA FARM BUREAU FOUNDATION

Lesson 3: Vegetables

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

PURPOSE

This lesson: Students will explore Nebraska's vegetable production and discover the healthy benefits from our locally produced vegetables.

Overview of Lesson Series: Students will 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.

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.

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?
   - Does Nebraska grow vegetables? If so, what are some examples of vegetables we grow in Nebraska?
   - Where can we purchase vegetables in Nebraska?
   - Why are vegetables important in our daily diet?

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- What did we learn about the parts of the plant that we eat?
- Were you surprised by some of the plant parts we eat? Why or why not?
- How are all of these plants connected to agriculture?
- What can we share with others about what we learned today?

MATERIALS

- Computer with PowerPoint Software
- Food Matters: Vegetables PowerPoint
- Nebraska MyPlate Poster
- Plant Cards – Food Matters: Vegetables PowerPoint
- Real Plants – Optional
  - » Carrots – Root
  - » Broccoli – Flower
  - » Celery – Stem
  - » Lettuce/Spinach – Leaf
  - » Tomatoes (Cherry) – Fruit
  - » Corn – Seed
- Edible Plant Parts Worksheet, 1 per student
- Edible Plant Parts Answer Key, 1 for teacher

WHAT'S THE CONNECTION TO AGRICULTURE?

It is important to know that much of our food comes from plants, and that we eat different parts of different plants. Farmers produce plants for animals and humans to eat. The fruits and vegetables we eat each day are seeds, roots, stems, leaves, fruits, and flowers.

PROCEDURES:

1. Organize and Prepare Supplies
   See "Materials" above.
2. Background Information
   Source: ChooseMyPlate.gov and Nebraska Department of Agriculture

   In Nebraska, we may grow vegetables in our gardens or greenhouses, there are a few farmers that grow them on a big scale. Most of Nebraska farmers are commercial farmers, meaning they grow commodities in large scale (sugar beets, corn, soybeans, wheat, etc.). Nebraska farmers produce corn, dry beans, soybeans, and some wheat. Fruit and vegetable production has experienced steady growth in Nebraska. While some areas may be more productive than others, production can be found throughout the state to varying degrees. This includes standard vegetables, such as tomatoes and cucumbers, to melons,pumpkins, squash, onions, berries, sweet corn, and many other types of produce. Just like fruits,

vegetables that are not in season or do not grow in Nebraska have to be shipped or trucked in from different states or even imported from other countries. For example, avocados and artichokes must be imported from other states or countries because Nebraska's climate is not suited for these vegetables to grow successfully all year around.

This highly intensive enterprise requires specialized equipment, a large labor supply and the knowledge to produce and market a profitable crop. Innovative, time-honored methods such as high tunnels, mulches, cold frames, and row covers are becoming increasingly popular among growers who wish to extend their harvest seasons to increase farm profitability.

Many fruit and vegetable farms diversify their marketing efforts by selling at farmer's markets, roadside stands, community supported agriculture (CSA), u-pick operations, and/or through wholesale and/or retail outlets. The number of Nebraska produce growers has increased 700 percent over the past decade from 78 in 2000 to more than 600 in recent years. Nebraska has approximately 100 farmer's markets, 240 roadside stands, and 40 u-pick operations.

The fruits and vegetables we eat come from different parts of the plant. Many students may not make the connection that when they sit down for a meal, they are eating a seed, root, or stem. There are six edible plant parts: seed (reproductive part of plant); root (part of plant typically underground providing water and nourishment); stem (main body or stalk of plant); leaf (flat and green—attached to stem); fruit (sweet and fleshy product of tree/plant and contains seeds); flower (brightly colored petals and bears seed). Farmers grow plants for us to eat. It is important for students to know and understand why farmers grow a certain fruit or vegetable—it is because we eat the seed, root, stem, leaf, fruit, or flower.

According to the USDA Dietary Guidelines, the recommended daily vegetables serving is 1½ - 2 cups for children 4 to 13 years old. Vegetables provides us with the essential nutrients to stay healthy. Vegetables are naturally low in fat and calories. Vegetables provide us with potassium, dietary fibers, and vitamins.

Vegetables containing:

- Potassium – Promotes healthy blood pressure.
- Fiber – Reduces Heart Disease and helps digestion.
- Vitamin A – Keeps eyes and skin healthy and helps to fight against infections.
- Vitamin C – Encourages growth and repair of body tissues, helps heal cuts or wounds.
- Folate (folic acid) – Help develop red blood cells.

Vegetables can:

- Reduce risk for heart disease, including heart attack and stroke.
- Protect against certain types of cancers.
- Vegetables containing fiber may reduce the risk of heart disease, obesity, and type 2 diabetes.

- Vegetables rich in potassium may lower blood pressure and may also reduce the risk of developing kidney stones and help to decrease bone loss.

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 fruit.
      - What does fruit give us? *Nutrients such as vitamins and minerals and can help our bodies remain healthy.*
      - Should you eat fruit every day? *Yes, 1 – 1½ cups.*
      - Where does fruit grow? *On trees, in fields.*
      - Can farmers in Nebraska grow all kinds of fruit? *No, some fruit must be shipped or imported to Nebraska.*
      - Where can we buy locally grown fruits? *Farmer's markets, produce stands, orchards, and maybe even in local grocery stores.*
   c. Explain that just like fruits have a lifecycle so do vegetables. They start out as seeds and grow into plants that we can eat.
   d. Ask students for examples of vegetables.
   e. Just like fruits, we can find locally grown vegetables at local farmer's markets, produce stands, and even in the grocery stores during the summer into the fall. Some people might even grow their own gardens in their back yards. Do any of you grow vegetables at your home? Over the winter months most fruits and vegetables must be imported from warmer states or countries for us to have access to them.
   f. Today we are going to dig deeper into locally grown vegetables.

4. Learning Activity 1 - Vegetables PowerPoint (20 Minutes)
   Content from choosemyplate.gov and sesamestreet.org - YouTube
   a. Slide 1 – Show students where vegetables are located on MyPlate (green). Read Andy and Tannie Daniels story about their vegetable farm on Nebraska's Choose MyPlate poster.
   b. Slide 2 – Ask students where they think vegetables grow. Do they grow in ground, on trees? Let's find out! Follow up with questions asking where do farmers plant their vegetables?
   c. Slide 3 – Explain that Nebraska grows a variety of vegetables right here in our state. We have several farmers who grow produce in Nebraska that specialize growing tomatoes, potatoes, lettuce, carrots, cucumbers, zucchini, peppers and many other vegetables over the summer and into fall. Farmers grow these vegetables for farmer's markets, produce stands, and even for some local grocery stores. Farmers take pride in producing local vegetables that offer a high-quality nutritional value to Nebraska's food supply. Most of these vegetables are available during the summer and fall months. Vegetables that are not in season or do not grow in Nebraska have to be shipped or trucked from different states or even imported from other countries. *If you know of any farms that specifically grow vegetables, point them out to the students. Or you can find local vendors and farmer's markets on this link: *www.nebraska.gov/apps-ag-farmers-market*.

d. Slide 4 – Examples of local grown vegetables. Ask students if they have ever tried any of these vegetables and if they have ever visited a farmer's market or produce stand to buy locally grown vegetables.
e. Slide 5 – Explain that vegetables can be consumed raw, cooked, fresh, frozen, canned, or dried. Some may be cut-up, eaten whole, mashed, or turned into juice.
f. Slide 6 – Explain that the daily recommended serving is 1½ – 2 cups of vegetables each day for kids ages 4-13.
g. Slide 7 – Explain why it is important to eat vegetables. Low in fat and calories, no cholesterol, great source of vitamins. *See notes on PowerPoint for greater detail or under background information above.
h. Slide 8 – Remind students that just like fruits need to be washed so do vegetables. They are wa shed and dried they same way fruits are.

5. Learning Activity 2 – Edible Plant Parts (20 Minutes)
Adapted from Arizona Agriculture in the Classroom
   a. Use the pictures of plants on Food Matters: Vegetables PowerPoint (begins on slide 10) to talk about the parts of the plant. Have students identify a seed, root, stem, leaf, fruit, and flower. Ask what they know about each part.
   b. Pose question: What part of plants do we eat? Expected responses: fruit, etc. Students may not understand that we eat different parts of plants.
   c. Explain that farmers grow crops and plants for both animals and humans to eat. When we eat a vegetable, we are eating one part of the plant.
   d. Give each student the "Edible Plant Parts" handout.
   e. Have students complete the worksheet using one of the following options: 1) work independently or with a partner to complete the worksheet; 2) complete the worksheet as a class, asking students to "vote" on which answer is correct; Note: Use pictures provided and/or have real examples of each of the plants listed to help students see and understand each one. If possible, have students taste some of the plants they aren't familiar with.

6. Ask Follow Up Questions and Make the Connection to Agriculture (3 -5 Minutes)
   - **What food group did we explore today?**
   Vegetables.
   - **Does Nebraska grow vegetables? If so, what are some examples of vegetables we grow in Nebraska?**
   Yes, but on not on a large scale like other crops in Nebraska. We grow some asparagus, broccoli, cabbage, cucumbers, peppers, potatoes, sweet corn, zucchini, etc.
   - **Where can we purchase vegetables in Nebraska?**
   We can purchase vegetables at produce stands, farmer's markets, grocery stores, or grow them in your garden at home.
   - **Why are vegetables important in our daily diet?**
   Vegetables provides us with vitamins and other essential nutrients to promote a healthy lifestyle.

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- **What did we learn about the parts of the plant that we eat?**
  We eat seeds, roots, stems, leaves, fruit, and flowers, which are parts of different fruits and vegetables.
- **Were you surprised by some of the plant parts we eat? Why or why not?**
  Answers may vary depending upon the experiences students have with each of the plants listed. Many will probably be surprised at which part of the plant they actually eat.
- **How are all of these plants connected to agriculture?**
  They are all a part of agriculture because farmers all grow these plants so that we can eat them. Some of these plants may be grown in our own gardens, too. It is important to know where our food comes from. The plants listed on the worksheet are grown in different places throughout the United States. In Nebraska, farmers may grow these in smaller fields or greenhouses. Farmers typically do not grow them on a big scale. Most of Nebraska farmers are commercial farmers, meaning they grow commodities in large scale (potatoes, sugar beets, corn, soybeans, wheat, etc.).
- **What can we share with others about what we learned today?**
  It is important to know that much of our food comes from plants, and that we eat different parts of different plants. Farmers produce plants for animals and humans to eat. The fruits and vegetables we eat each day are seeds, roots, stems, leaves, fruits, and flowers.

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Name: _____ Date: _____

EDIBLE PLANT PARTS

Place an "x" in the box under the part of the plant we eat.

Plant	Seed	Root	Stem	Leaf	Fruit	Flower
Apple						
Asparagus						
Beets						
Broccoli						
Cabbage						
Carrot						
Cauliflower						
Celery						
Cloves						
Corn						
Lettuce						
Olive						
Onion						
Orange						
Parsley						
Pinto Bean						
Potato						
Pumpkin						
Radish						
Rhubarb						
Rice						
Soybean						
Spinach						
Tomato						
Turnip						
Wheat						

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EDIBLE PLANT PARTS - ANSWER KEY

Place an "x" in the box under the part of the plant we eat.

Plant	Seed	Root	Stem	Leaf	Fruit	Flower
Apple					X	
Asparagus			X			
Beets		X				
Broccoli						X
Cabbage				X		
Carrot		X				
Cauliflower						X
Celery			X			
Cloves						X
Corn	X					
Lettuce				X		
Olive					X	
Onion			X			
Orange					X	
Parsley				X		
Pinto Bean	X					
Potato		X				
Pumpkin					X	
Radish		X				
Rhubarb			X			
Rice	X					
Soybean	X					
Spinach				X		
Tomato					X	
Turnip		X				
Wheat	X					