



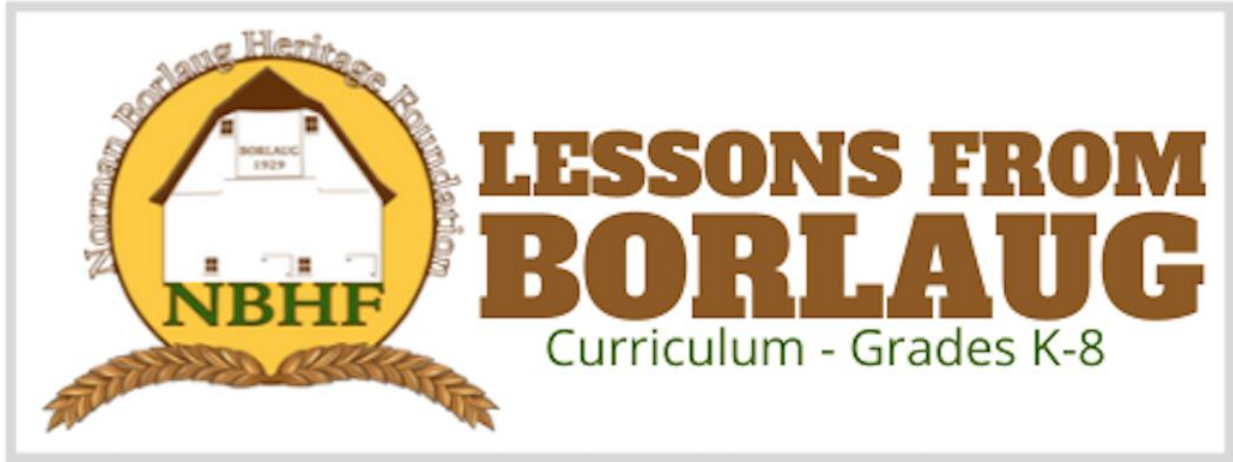
This master curriculum includes lessons 1st grade. 1st graders will understand that each crop is different by comparing apples to pumpkins. Then, they will learn how crop's uniqueness can be capitalized on when processing them into items we use each day such a corn to cereal and cotton to blue jeans. Each lesson offers context as to how this idea relates to Norman Borlaug, the "Father of the Green Revolution".

Educators may find this curriculum useful to use prior to attending the Borlaug farms. The Norman Borlaug Heritage Foundation provides educational opportunities for schools to attend. Whether attending a tour or participating in Inspire Days, children will become aware of Norman Borlaug's work and his everlasting impact on the current day.

***Want to learn more about Norman Borlaug or
the Norman Borlaug Heritage Foundation?
VISIT OR CALL!***

Contact Chamber of Commerce for more information
101 2nd Ave. SW, Cresco, IA 52136
Email: Jason@howard-county.com
Call: 563-547-3434

Borlaug Farms Addresses
Birthplace farm: 20399 Timber Ave Cresco, IA 52136
Boyhood Farm: 19518 200th St. Cresco, IA 52136



1st Grade

Compare Apples to Pumpkins pg. 3

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Apples to Pumpkins

Grade: 1st grade

Time: 30 minutes

Purpose:

- Students will explore the life cycles and traits of apples and pumpkins.
- Students will compare and contrast apples and pumpkins to the fruits and vegetables that Norman Borlaug grew on his family's farm.

Materials:

- Apples
- Small Pumpkins
- Larger paper bags
- *From Seed to Pumpkin* by Wendy Pfeffer
- White Board/Marker or chart paper

Resources:

- *What Am I? Looking Through Shapes at Apples and Grapes* by N.N. Charles
- *Pumpkin Circle* by George Levenson

Vocabulary:

- **Soil:** the upper layer of earth in which plants grow, a black or dark brown material typically consisting of material of organic remains, clay, and rock particles
- **Seedling:** a young plant, especially one raised from seed and not from a cutting
- **Blossom:** the flower of a plant, especially of one producing an edible fruit

Spark Curiosity By...

Placing the apple and the pumpkin in two separate paper bags, one labeled “one” and one labeled “two”. Have students come up to the apple and pumpkin bags in pairs to feel them and silently return to their seats. On a white board or chart paper, create a column for bag one and bag two. Ask students to share their observation of each bag and record them. Students may use their eyes, ears, nose, and hands to attempt to guess the contents of the bag.



Agricultural Background

Pumpkins and apples are fruits that are grown from a seed. Both are harvested by hand, usually, though apples grow on trees and pumpkins grow on vines in the ground.

There are many apple orchards in Iowa. Illinois is the top pumpkin-producing state. Apples and pumpkins are grown on farms.

Lesson

1. Read *From Seed to Pumpkin* with students. Ask discussion questions like:
 - a. What does a pumpkin start out as?
 - b. What does a pumpkin need to grow?
 - c. What time of year are pumpkins ready to be harvested?
 - d. What are pumpkins used for?
 - e. Who grows pumpkins?
2. Divide students into two teams. Ask one team to find an object in the room that has similar characteristics to a pumpkin. Ask the other team to try and find an object with similar characteristics to an apple. After 5 minutes, draw the group back together and share findings.
3. Remove the paper bags from the apple and pumpkin. Ask students to come up in pairs and use their eyes, ears, and hands to analyze the fruits.
4. Create a Venn or Bubble diagram to compare and contrast the apple and pumpkin. Have students suggest characteristics to go in each of the sections of the diagram.

Connection to Norman Borlaug

Norman grew many fruits and vegetables on his family's farm when he was growing up. The Borlaug family grew fruits such as apples, cherries, plums, raspberries, and blackberries. The family also grew vegetables; radishes, potatoes, tomatoes, carrots, peas, string beans, and lettuce.

Have an open discussion with the class asking them to think about their experiences with fruits and vegetables.

- What fruits do you enjoy the most? The least?
- What vegetables do you like the most? The least?
- Are there any fruits that Norm grew that's similar to apples?
- Are there any vegetables that Norm grew similar to pumpkins?



National Agriculture Literacy Outcomes

- Plants and Animals for Food, Fiber & Energy
 - Explain how farmers/ranchers work with the life cycles of plants and animals (planting/breeding) to harvest a crop
- Culture, Society, Economy & Geography:
 - Discuss what a farmer does

Iowa Early Learning Standards

- 8.3: Small Motor Development: Children Develop small motor skills.
- 9.1: Curiosity and initiative: Children express curiosity, interest, and initiative in exploring the environment, engaging in experiences, and learning new skills.
- 9.4 Play and Senses: Children engage in play to learn
 - 2. Uses sights, smells, sounds, textures, and tastes to discriminate between and explore experiences, materials, and the environment
- 13.1: Art: Children participate in a variety of art and sensory-related experiences.
 - 1. Uses a variety of drawing and art materials, such as drawing utensils, paint, clay, and wood to create original works, form, and meaning

Iowa Core Standards

- Math:
 - K.MD.A2 : Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference.
- Iowa Core Science Standards:
 - K-LS1-1: Use observations to describe patterns of what plants and animals (including humans) need to survive.

The class has learned that crop have many similarities and differences. To build upon that thought, students will learn how we as Americans capitalize on those differences. In the next lesson, students will understand how crops can be planted, harvested, and processed to create items that we use each and every day.



Corn to Cereal, Cotton to Blue Jeans

Grade: 1st

Time: Three 40 minute sessions

Purpose:

- Students will learn about goods and services.
- Students will understand how different goods get from the farm to the consumer.
- Students will learn about different dairy products Norman made on the farm.
- Students will understand the process of collecting milk, in the early 1900's and today.

Materials:

- Books for lesson (available for checkout in the IALF lending library)
 - *From Corn to Cereal* by Roberta Basel
 - *PB&J Hooray* by Janet Nolan
 - *How Did That Get In My Lunchbox?* By Chris Butterworth
 - *Who Grew My Soup?* By Tom Darbyshire
 - *From Egg to Chicken* by Anita Ganeri
 - *From Oranges to Orange Juice* by Kristin Keller
- Articles of clothing made from different sources (Blue Jean = cotton, mittens = wool, fleece = plastic)
- Flow Chart (attached)
- Outline of World Map (attached)

Resources:

- Hatch Farms Harvesting Corn in Iowa 2015 – <https://youtu.be/vlfvGyKLr1Y>
- Apple Harvest – <https://youtu.be/Yzj9SRoi2Aw>
- The Story of Cotton – https://youtu.be/AAUQNMI dp_Y
- Sheep Shearing: Children DVD: Bee Bright On the Farm: Amazing Animals – Justin Fletcher – <https://youtu.be/TtP631Ohg1Y>

Vocabulary:

- Goods: articles of trade; wares; merchandise
- Services: the providing of a provider of accommodation and activities required by the public, as maintenance, repair, etc.
- Consumer: a person or organization that uses a commodity or service
- Producer: a person who creates economic value, or produces goods and service



Spark Curiosity By...

1. Read the story, *From Corn to Cereal* by Roberta Basel
2. Discuss with students and make a flowchart on the white board on how the corn goes from the farm to the consumer. (Corn is harvested, goes to cooperative, transported to food processor, cereal is shipped to a wholesaler, then to the grocery store, then to the consumer)
3. Students could view video clips on harvesting or how the corn gets from the farm to the store. One suggestion is Hatch Farms Harvesting Corn in Iowa 2015.

Agricultural Background

People from around the world eat many different types of food. The food people eat is often determined by their local culture and what can be grown or raised near them. The production of food does not end at the farm. Once the crop and animal is harvested it is then put into production to create many goods and services for the consumer.

Coming from the state of Iowa, we are one of the top agricultural producing states, and produce products that are exported internationally! Iowa is a leading producer in corn, soybeans, pork, and eggs. Ninety-nine percent of the corn that is grown in Iowa is field or dent corn. It is not something we can eat right now out of the field. Less than 1% of the corn grown in the United States is sweet corn. Dent/field corn is mainly used for ethanol production and as a feed source for livestock, but it also helps make over 4,000 other products we use every day. The starch of the corn plant goes into making adhesives for glues, plywood, fireworks, sandpaper, and wallpaper. The oil of the corn plant goes into making tanning oils, printing inks, and vitamin carriers. And the corn cob goes into making cosmetic powders, cleaning agents, and construction paper. Products like toothpaste, toothbrushes, shampoo, medicines, glues, chewing gums all have corn in them.

This is made possible by using by-products. By-products are goods that are produced additionally to another product. For example, the main purpose of beef cattle is for meat production. After meat has been harvested there are still many things that can be made from beef cattle. The hooves, horns, and bones are used to make toothbrushes, toothpaste, cosmetics, glues, adhesives, paper, Jell-O, marshmallows, and bone china. The hide of cattle is used to make leather products such as sports items like baseball gloves, as well as belts, shoes, and jackets. Beef fat helps make soaps, shampoos, and other personal hygiene items.

Soybeans also contribute to the list of items made from agriculture. Some of the more familiar products from soybeans would include soy milk, soy sauce, and bean sprouts. Also, edamame are immature soybeans and tofu is another use of soybeans. Soybeans also go into products that we may not generally think of like pastry fillings, whipped toppings, paints, crayons, biodiesel, laundry detergents, antifreeze and so much more.



Pigs are also used to create goods. Not only is the pork industry known for their juicy pork chops and sweet honey hams but it also contributes largely to the medical industry. If you are diabetic, the insulin you use can come from the pancreas of pigs. Cortisone is produced from the adrenal glands and heart valves come from the heart to aid in medical surgeries.

Lesson (1 of 3)

1. Give students other goods and services books and have them work in small groups to make flowcharts, using the Goods and Services Flowchart document, to show how different foods get from the farm to consumers.
 - a. Books to use include:
 - i. *PB&J Hooray* by Janet Nolan
 - ii. *How Did That Get In My Lunchbox?* By Chris Butterworth
 - iii. *Who Grew My Soup?* By Tom Darbyshire
 - iv. *From Egg to Chicken* by Anita Ganeri
 - v. *From Oranges to Orange Juice* by Kristin Keller
2. Have students present their Flow Charts to the class.
 - . Ask questions like where the item originated, how it is grown, how it is processed, how consumers get it, etc.

Lesson (2 of 3)

1. Bring in different clothing items such as a sweater, shirt, jeans, and mittens. Ask students if they know how these goods are made and get to consumers.
2. Explain that just like food, farmers also help provide the fiber for the clothing we wear. Read the story *Where Did My Clothes Come From?* by Chris Butterworth aloud to the whole class.
3. As a class, have students discuss together to make a flowchart on how cotton goes from the plant to the consumer. Use a white board or projector and draw what the students tell you.
 - a. Cotton is grown in the southern United States. Cotton grows on a plant in bolls. The bolls are harvested, baled, and sent to a cotton gin. The gin separates the cotton from the cotton seeds and other plant parts they don't want. The pure, clean cotton is then put in smaller bales that are sold to textile plants and other customers. Clothing makers may buy the bales and process them into pants, shirts, and other goods that will be packaged and sent to stores for summers like us.
4. Then, have students work in pairs to create flowcharts using the Goods and Services Flow Chart on how a sheep's wool gets to consumers.
 - . Wool comes from sheep. Sheep are sheared once or twice per year, and the farmer collects the wool to sell. The farmer may form a group with other wool armors called a cooperative so they get the best price possible. A customer like a textile company might purchase the raw wool, clean it, process it, and create yarn or even clothing. The finished product will then be packaged and sent to stores for customers like us.
5. Think-Pair-Share: Have students discuss one thing they learned about clothing from today's lesson with a partner. Then ask for ideas from the class in a large group discussion.



Lesson (3 of 3)

1. Today, students will compare the goods they eat at lunch to the goods other students eat around the world.
2. Choose to either read the book *What's for Lunch* or watch the YouTube video, School Lunches Around the World.
3. Discuss what they saw in the video. Make some comparisons between lunches they eat to different foods they see.
4. Give students the Outline of World Map and have them draw a picture of one thing that people consume in different parts of the world based on what they learned from the book or website. Complete the activity together to ensure the foods are placed on the correct place on the map.
 - a. Some examples could be:
 - i. Japan – miso soup, mackerel, rice (video: pickled spinach)
 - ii. India – dal (rice with lentils or peas) (Video: rice, dale mahkhani, saag paneer)
 - iii. France – bread, cheese, chicken, vegetables (video: grapefruit, salad, rice pudding)
 - iv. Mexico – chips, sandwich (torte)
 - v. Kenya – CSB (nutrient-fortified corn-soy blend soup)
 - vi. Canada – cookies, yogurt, carrots, sandwich
 - vii. Brazil – rice, beans, beef, potatoes, banana
 - viii. Russia – bread, beef, kasha (porridge), borsch (beet soup)
 - ix. Peru – cuy (Guinea pig meat), quinoa and vegetable soup
 - x. U.S. – mixed fruit, corn, pizza
 - xi. Afghanistan – high energy biscuits
 - xii. England – carrots, potatoes, peas, roast beef and gravy, Yorkshire pudding
 - xiii. China – rice, pork, vegetables, soup
 - xiv. Cuba – rice, ropa vieja
 - xv. Norway – strawberries, open-faced sandwich, yogurt
 - xvi. Nigeria – beans, plantains, rice
 - xvii. Philippines – rice, lechon kawali
 - xviii. Korea – purple rice, soup, radish, bulgogi, kimchi

Extension Activities:

- Do a pork, beef, dairy, or corn Farm Chat
- Do a field trip to different farms
- Begin a pen pal program with a farmer to learn more about what they do to get products to consumers



Connection to Norman Borlaug

Just like corn and cotton can be used to create cereal and cotton, milk can be processed to make many different things! Norman Borlaug often had a milk cow at the family farm. They would milk her 2 times a day - by hand! After they collected her milk, they could make many different things such as cream, butter, or cheese.

Have an open discussion about other dairy products that are made from cow's milk. You can ask these questions to direct the conversation.

- How would Norman have to store the milk so it doesn't spoil?
 - Put the milk in an ice box
 - An ice box is an old-time refrigerator.
- Is homogenization used to create cream?
 - No!
 - Cream is made by letting milk separate. If homogenized, the milk will not separate.
- What tools are used to create butter?
 - Container, Stirrer, Milk
- Do you think additional flavors are added when cheese is made?
 - Yes!
 - We can add spices to cheese to create flavor.

Producing dairy products is very easy today because we have robots to collect milk, electronic milk tanks that control the storage temperature, fast milk trucks to take the milk from the farm to the creamery, and machines to get homogenized and pasteurized the milk on the farm. Unfortunately, Norman didn't have these tools when he hand-milked his cow many years ago.

Brainstorm as a class what different things could possibly spoil the milk that Norman collected.

Then, brainstorm as a class different signs that may show if the milk is spoiled.

Norman and his family had to be very careful when collecting the milk. As you know, many things can affect the quality of milk. Oftentimes milk was warmed up to kill any harmful bacteria that may have been in it. Otherwise, it was placed in an ice cooler. An ice cooler is what was used instead of a refrigerator!



Sources/Credits

<http://www.outline-world-map.com/transparent-blank-world-maps>

National Agriculture Literacy Outcomes

- T1.K-2.c: Identify examples of feed/food products eaten by animals and people

Iowa Core Standards

Social Studies

- SS.1.8: Identify students' own cultural practices and those of other within the community and around the world.
- SS.1.11: Compare the goods and services that people in the local community produce with those that are produced in other communities.

English Language Arts

- RI.1.7: Use the illustrations and details in a text to describe its key ideas