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Introduction to Agriculture - 9 Week Middle School Curriculum

Katelyn Schultz

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Introduction to Agricultural Education
This is a 9-week course that meets Monday through Friday for 44 minutes a day.

COURSE DESCRIPTION
This course is a foundation course for Agriculture, Food, and Natural Resources. This course will introduce the main ideas of scientific agricultural production and research. Students will be involved in a variety of problem-solving activities, introductory skills, and knowledge in agricultural science and agricultural technologies. Classroom and Laboratory activities will be used to instruct students through supervised agricultural experiences and leadership programs and activities. This course is a quarter or 9 week-long class for 8th-grade students.

COURSE STANDARDS

<table>
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<tr>
<th>Standards</th>
<th>Description</th>
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<tbody>
<tr>
<td>AFNR-BAS-1</td>
<td>Demonstrate employability skills required by business and industry</td>
</tr>
<tr>
<td>AFNR-BAS-2</td>
<td>Relate the role of the FFA student organization in the students' personal development</td>
</tr>
<tr>
<td>AFNR-BAS-3</td>
<td>Explore, develop, and implement the Supervised Agricultural Experience (SAE) program by researching careers in agriculture and agribusiness</td>
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<tr>
<td>AFNR-BAS-4</td>
<td>Recognize how agriculture meets human needs today, in the past, and for the future</td>
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<tr>
<td>AFNR-BAS-5</td>
<td>Determine and illustrate safety in the agriculture lab and agriculture worksites</td>
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<tr>
<td>AFNR-BAS-6</td>
<td>Describe soil formation and management and assess its relevance to plant/animal production and natural resources management</td>
</tr>
<tr>
<td>AFNR-BAS-7</td>
<td>Demonstrate knowledge of physics used in agriculture as it relates to work, power, simple machines, and both past and present machinery used in the agricultural industry</td>
</tr>
<tr>
<td>AFNR-BAS-8</td>
<td>Identify the different areas of agriscience and relate the scientific classification system to organize and research the agriscience field</td>
</tr>
<tr>
<td>AFNR-BAS-9</td>
<td>Define major components of the animal industry and outline the development of the resulting products, services, and careers</td>
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<tr>
<td>AFNR-BAS-10</td>
<td>Demonstrate basic skills in natural resource management</td>
</tr>
<tr>
<td>AFNR-BAS-11</td>
<td>Apply principles of science to food processing to provide a safe, wholesome and nutritious food supply</td>
</tr>
<tr>
<td>AFNR-BAS-12</td>
<td>Apply principles of environmental science as it relates to agricultural production and sustainability</td>
</tr>
<tr>
<td>AFNR-BAS-13</td>
<td>Explain and demonstrate basic plant science principles including plant health, growth and reproduction</td>
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<tr>
<td>Day</td>
<td>Essential Question</td>
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<td>---------------------------------------------------------</td>
</tr>
<tr>
<td>Day 1:</td>
<td>What is Agriculture?</td>
</tr>
<tr>
<td>Day 2:</td>
<td>What does the FFA emblem mean and why are those</td>
</tr>
<tr>
<td></td>
<td>important to the FFA?</td>
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<tr>
<td>Day 3:</td>
<td>What is the role of the FFA student organization?</td>
</tr>
<tr>
<td>Day 4:</td>
<td>How does FFA provide students with leadership</td>
</tr>
<tr>
<td></td>
<td>opportunities?</td>
</tr>
<tr>
<td>Day 5:</td>
<td>What does FFA look like at our high school?</td>
</tr>
</tbody>
</table>
Title of Lesson: What is Agriculture?  
Total Lesson Time: 44 Minutes
Grade: 8th Grade  
Subject Area: Lab Science - Agriculture Education

Curriculum Standard(s)

<table>
<thead>
<tr>
<th>Curriculum Standard(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFNR-BAS-2</td>
<td>Relate the role of the FFA student organization in the students’ personal development</td>
</tr>
<tr>
<td>AFNR-BAS-7</td>
<td>Demonstrate knowledge of physics used in agriculture as it relates to work, power, simple machines, and both past and present machinery used in the agricultural industry</td>
</tr>
</tbody>
</table>

Learning Objectives (Benchmark) and Assessment:

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to define Agriculture in their own words.</td>
<td>1. Definition Poster</td>
</tr>
</tbody>
</table>

Materials Needed:

- Beginning of the Year Survey
- Agriculture and Our Society Reading and Questions
- Pencil
- Pen
- White Paper
- Construction Paper
- Markers
- Crayons
- Colored Pencils
- Computers

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Large Group Work and Individual Work Time</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bell Work</td>
<td></td>
</tr>
<tr>
<td>a. Ag Education Beginning of the year Survey?</td>
<td></td>
</tr>
<tr>
<td>i. Answer: Will Vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td></td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the Ag Education beginning of the year survey and then we will move on.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. Introduction to the class</td>
<td></td>
</tr>
<tr>
<td>a. Welcome to Introduction to Agricultural Education.</td>
<td></td>
</tr>
<tr>
<td>b. This course is a foundation course for Agriculture, Food, and Natural Resources. This course will introduce the main ideas of scientific agricultural production and research. Students will be involved in a variety of problem-solving activities, introductory skills, and knowledge in agricultural science and agricultural technologies. Classroom and Laboratory activities will be used to instruct students</td>
<td></td>
</tr>
</tbody>
</table>
through supervised agricultural experiences and leadership programs and activities. This course is a quarter or 9 weeks long class for 8th-grade students.

i. I am excited that you are taking this course.

ii. Do you have any questions before we get started?
   1. Allow for some question and answer time

4. Introduction to Agriculture
   a. We will look over the surveys that students took to begin the day. This will be a short discussion time to see where the students are and what we can learn from one another.
   i. Student Answers will Vary as their experiences and upbringing has been different.

5. Agricultural Reading
   a. The teacher will read *Agriculture and Our Society* out loud to the class and they will answer the questions as they go through the reading.
   i. Explain why agriculture is important to our society.
      1. We eat every day and this is where our food comes from. We as a town have lots of farms and if we didn’t have that we would have a smaller population.
   ii. Give two examples of livestock.
      1. Cows, pigs, goats, chicken, sheep
   iii. If you had a farm on five acres and grew a small variety of vegetables and exchanged some of the vegetables with your neighbor for his fresh eggs, identify the type of farming this is.
      1. Subsistence Farming
   iv. In the 1600s, what two farm tools did the settlers use to farm with in the United States?
      1. Y-Shaped Plows and Hoes
   v. List the three main agriculture inventions in order chronologically mentioned in third paragraph and the person that invented each farm implement?
      1. Cotton Gin - Eli Whitney
      2. Reaper - Cyrus McCormick
      3. Steel Plow - John Deere
   vi. Find the word surpluses in boldface print. Use the context of the sentence to help you write a definition of the word surplus.
      1. More than what is needed
   vii. What was the cause of the Dust Bowl in the Great Plains?
      1. Drought
   viii. List three of the new technologies that helped production in American agriculture in WWII.
      1. Fertilizers, Pesticides
      2. New Breeds of Livestock
      3. Improved Seed and Feed.
ix. If you were a farmer during the Dust Bowl briefly describe how you would feel about having to relocate to another place to live. (An answer such as not good is not acceptable.)
   1. I would feel mad, upset, disappointed that I had to leave something that I worked for and might not be able to take with me.

x. By the year 2025, what do you think will happen to American agriculture concerning the amount of people one farmer can feed and why?
   1. Less farmers are going to be around so farmers are going to need to feed more people.

b. Ask the students if they have any other questions.
c. Collect the reading

<table>
<thead>
<tr>
<th>6. 30 Second Challenge</th>
<th>1 Min</th>
</tr>
</thead>
</table>
a. Students will go back to their desk, get out a piece of paper and they will be given 30 seconds to write down their definition of Agriculture and what Agriculture means to them.

<table>
<thead>
<tr>
<th>7. Poster Making</th>
<th>13 Mins</th>
</tr>
</thead>
</table>
a. Give students a piece of white paper
b. Students will be able to design a poster on an 8.5x11 sheet of paper.
c. Give students the options to create a poster on the computer or to make a handmade copy.
d. Students should design a rough draft and then get to work on the final product.

| 8. Conclusion | 4 Mins |
a. If students are done with their poster, they can turn them in.
b. If students are still working, it is homework for them to complete and turn in tomorrow at the beginning of class.
c. If time allows, have students present their posters to the class.
Agriculture Education - Beginning of the Quarter Survey

What experience do you have in Agriculture?

What are you looking forward to learning this quarter?

How do you learn best and what strategies help you learn?

What responsibilities do you have before or after school and on weekends?

What do you know about FFA?

Do you have older siblings or even parents that were involved in Ag or FFA in high school?

What are your plans after graduation?

Are you willing to be reflective of this class?
Agriculture and Our Society

Agriculture is part of our daily lives. Agriculture is the process of producing food, feed, and fiber, and many other products by the cultivation of certain plants and the raising of domesticated animals called livestock. The practice of agriculture is also known as farming a majority of the time. While scientists and inventors are devoted to improving farming methods and implements, they are also said to be engaged in agriculture. There are two types of agriculture: subsistence farming and commercial agriculture. Subsistence farming in which one farms a small area with limited resources and produces only enough food to feed his or her family with maybe a little left to trade. On the other end of the spectrum is commercial agriculture. Commercial agriculture involves farming large fields or a large number of animals. Commercial agriculture also possesses large resource inputs such as pesticides and has a large amount of technology and mechanization.

1. Explain why agriculture is important to our society.

2. Give two examples of livestock.

3. If you had a farm on five acres and grew a small variety of vegetables and exchanged some of the vegetables with your neighbor for his fresh eggs, identify the type of farming this is.

Agriculture has always been a part of history. Around 8000 BC, primitive people began growing food as well as hunting and gathering it. This enabled them to live together in one place. Earlier people had moved to hunt the animals wherever they could hunt, and they picked wild edible plants as they went. The plow was invented in ancient Mesopotamia around 3500 BC. The first plow was probably a Y-shaped branch pulled by an ox. When settlers first came to the United States in the 1600s, the only farm tools they had were these Y-shaped plows. Native Americans showed them how to make a hoe with a large stick and the bone of an animal.

In American agriculture, inventions gradually made farm work easier. The cotton gin was invented in 1793 by Eli Whitney to separate the seeds from the cotton. For the first time in agriculture, a machine replaced the work of many people. Grain had been harvested for thousands of years by hand with scythes and sickles, but Cyrus McCormick’s invention of the reaper in 1834 was the first horse-drawn grain harvester. Another machine, called a thresher, came to the fields to separate the grain from the chaff. Today, these two steps are combined in a machine called the combine. The steel plow was developed in 1836 by John Deere to make breaking and turning the soil easier. This invention was lighter in weight to pull through the fields, and soil didn't cling to the steel as it did to wood and iron plows. Through the early 1800s, other machines powered by horses were invented, such as the grain drill, mower and cultivator.
When the Civil War began, new technology was adopted quickly because of the labor shortage and strong demand for farm products. In 1862, President Abraham Lincoln signed the Homestead Act, which helped settle the West with farmers. In the late 1800s and early 1900s, technology made rapid advances in agriculture. Production increased dramatically as hybrid corn was developed. By crossbreeding, corn plants grew faster and produced more kernels per ear. Other developments improved crops and livestock. With these advancements providing surpluses, prices stayed low until World War I due to these extra food products.

By the 1930s, most farmers owned tractors to pull equipment, but the Dust Bowl wiped out many Great Plains producers. During these years of drought, many farmers moved west to find jobs. World War II led to the complete shift from animal to mechanical power on farms because of a shortage of farm workers and incentives to produce food. After the war, technology helped production skyrocket. Fertilizers, improved seed and feed, new breeds of livestock and pesticides were just a few of the revolutionary additions.

Until 1900 most producers were subsistence farmers. In the 1800s, one farm worker could feed five people. Today farmers keep their records and make feeding, planting and marketing decisions with computers. Farms are larger than ever, but they still require less labor thanks to modern machinery. Now farmers usually specialize by producing one or two crops or one type of livestock. Today, one farmer can produce enough to feed 155 people. Fewer farmers are needed to feed the world, so people are free to pursue other careers. American agriculture has come a long way. Science and technology continue to make advancements to provide consumers with higher-quality, less-expensive food.

4. In the 1600s, what two farm tools did the settlers use to farm with in the United States?

5. List the three main agriculture inventions in order chronologically mentioned in third paragraph and the person that invented each farm implement?
6. Find the word surpluses in boldface print. Use the context of the sentence to help you write a definition of the word surplus.

7. What was the cause of the Dust Bowl in the Great Plains?

8. List three of the new technologies that helped production in American agriculture in WWII.

9. If you were a farmer during the Dust Bowl briefly describe how you would feel about having to relocate to another place to live. (An answer such as not good is not acceptable.)

10. By the year 2025, what do you think will happen to American agriculture concerning the amount of people one farmer can feed and why?
Title of Lesson: What does the FFA emblem mean & why are those important to the FFA? Total Lesson Time: 44 Minutes
Grade: 8th Grade  Subject Area: Lab Science - Agriculture Education

Curriculum Standard(s)

| AFNR-BAS-2 | Relate the role of the FFA student organization in the students’ personal development |

Learning Objectives (Benchmark) and Assessment:

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<tbody>
<tr>
<td>1. Students will be able to identify what the 5 symbols and the words on the FFA emblem stand for and what the colors mean.</td>
<td>1. FFA Webquest</td>
</tr>
</tbody>
</table>

Materials Needed:

- Computers
- Pencil
- FFA Webquest

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time and Large Group Instruction</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bell Work</td>
<td>4 Mins</td>
</tr>
<tr>
<td>a. What does Agriculture mean to you?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td>5 Mins</td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the Ag Education beginning of the year survey and then we will move on.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. Recap from yesterday</td>
<td>3 Mins</td>
</tr>
<tr>
<td>a. Yesterday, we looked at some history of agriculture and the meaning of it. Who would like to show us their posters?</td>
<td></td>
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<tr>
<td>i. Have a couple of students stand up and present their posters to the class.</td>
<td></td>
</tr>
<tr>
<td>4. What is FFA?</td>
<td>20 Mins</td>
</tr>
<tr>
<td>a. What is the FFA?</td>
<td></td>
</tr>
<tr>
<td>i. FFA is a dynamic youth organization that changes lives and prepares members for premier leadership, personal growth and career success through agricultural education.</td>
<td></td>
</tr>
<tr>
<td>b. Do we have a chapter here? What is our chapter called?</td>
<td></td>
</tr>
<tr>
<td>i. Yes, Lena Winslow FFA Chapter</td>
<td></td>
</tr>
<tr>
<td>1. We have had a chapter for over 60 years and we are one of six schools in section 1 that have between 40-60 members.</td>
<td></td>
</tr>
<tr>
<td>c. Hand out the FFA Webquest</td>
<td></td>
</tr>
<tr>
<td>i. Students will use their computers to follow the links to discover more about FFA and other chapters within the United States.</td>
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</table>
### Conclusion

- What was the most interesting part of the FFA webquest?
- Would you be interested in joining FFA next year?

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<tbody>
<tr>
<td>i. Students will even have a chance to learn more about the Lena Winslow FFA Chapter when a Chapter member comes to talk to them tomorrow.</td>
<td>2 Mins</td>
</tr>
</tbody>
</table>
FFA Webquest
Follow the links to search for the answers to the following questions.

Who are the National FFA Officers? What States are they from?
https://www.ffa.org/national-ffa-officers/

What are the top 5 states for FFA membership? What rank is the state of Illinois?

What are CDEs? How can CDE’s help YOU! What are 2 CDEs that you would like to try?
https://www.ffa.org/participate/cde-lde/

Pick 5 important dates to FFA. Write the date and why that event was significant to FFA.
https://www.ffa.org/about/who-we-are/mission-motto/

Watch the National FFA Convention Review. Write 5 things that happened at Convention.
https://vimeo.com/297947939

What is National FFA week? When is it? What is an activity YOUR chapter could do?
https://www.ffa.org/national-ffa-week/
What the video about the FFA creed. What is the FFA Creed? What is your favorite line. 
https://vimeo.com/143390147

What is the Three-Component Model? What are the 3 components? https://www.ffa.org/agricultural-education/

What does SAE stand for? What are the 5 immersion SAE types? http://thecouncil.ffa.org/sae/

Watch the video. Reflection on why ‘We are the future of agriculture.’ Do you agree? https://vimeo.com/117522836

How many symbols does the FFA emblem consist of? What are the symbols and what do they mean? https://ffa.app.box.com/s/mfariony13gxcitqtfq0y60i8x7ceru

What are the colors of the FFA? https://www.ffa.org/media-center/identity/

Do you think FFA is something you will be part of in high school? Explain https://www.le-win.net/apps/pages/index.jsp?uREC_ID=172988&type=d
Title of Lesson: What is the role of the FFA student organization? Total Lesson Time: 44 Minutes
Grade: 8th Grade Subject Area: Lab Science- Agriculture Education

Curriculum Standard(s)

| AFNR-BAS-2 | Relate the role of the FFA student organization in the students’ personal development |

Learning Objectives (Benchmark) and Assessment:

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<tr>
<td>1. Students will be able to explain how the FFA aids in Agricultural Education and how they can be involved in FFA in high school.</td>
<td>1. 5 Paragraph Essay and question/answer sheet</td>
</tr>
</tbody>
</table>

Materials Needed:

Pencil
Guest Speaker
5 Paragraph Essay and question/answer sheet
Computers
FFA Webquest

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time and Large Group Instruction</th>
<th>Time</th>
</tr>
</thead>
</table>
| 1. Bell Work  
  a. What are some reasons to join FFA?  
  i. Answers will vary  
  2. Greet the students and give directions on bell work.  
  a. Tell the class, “Good Morning”  
  i. They should reply with “Good Morning, Mrs. Schultz!”  
  ii. “You have 4 minutes to complete the question of the day.”  
  1. At this time, the teacher will take attendance.  
  3. Lena Winslow FFA Chapter Presents  
  a. Today, 4 members from the local FFA chapter are coming over to talk to the students.  
  b. The FFA President, Reporter, Treasurer, and Historian all came over to talk.  
  c. They talked about the opportunities in high school, the activities they are involved in, and some of their best memories.  
  d. Students have to come up with 3 questions to ask high school students.  
  i. These questions need to be written down and then, students need to write down the answer they received.  
  4. Complete the learning goal  
  a. On the back of the question sheet, students will need to write a 5 sentence paragraph that answers the question How does the FFA aid in Agricultural Education and how can you be involved in FFA in high school?  
  b. Please turn your paragraph into the inbox before the end of class. Please look it over to make sure you answered the questions. | 4 Mins | 22 Mins | 5 Mins |
c. You will be reading these paragraphs aloud to the class tomorrow and we will rate the understanding of FFA in Agricultural Education.

5. Work on Webquest
   i. Students can use the computers in the back of the room and work on their Webquest.
   ii. If students finish webquest, they can turn it into the bin. If they do not finish, it is homework.

6. Conclusion
   a. The Webquest is homework if you don’t have it finished. If you do not have access to the internet, you will need to make arrangements with me to complete it.
   b. The paragraph should be turned in but, if you need time you can take it home and turn it in tomorrow.
3 Questions I have for an FFA Member

1. Question:

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

a. Answer:

___________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

2. Question:

__________________________________________________________________________________
__________________________________________________________________________________

a. Answer:

___________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

3. Question:

__________________________________________________________________________________
__________________________________________________________________________________

a. Answer:

___________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
Please write 5 sentences or more explaining the following:
How does the FFA aid in Agricultural Education and how can you be involved in FFA in high school?
Title: How does FFA provide students with leadership opportunities?  
Lesson Time: 44 Minutes

Grade: 8th Grade  
Subject Area: Lab Science- Agriculture Education

Curriculum Standard(s)

| AFNR-BAS-2 | Relate the role of the FFA student organization in the students’ personal development |

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<tr>
<td>1. Students will be able to distinguish between the roles of the FFA officers and decide how each officer role embodies leadership.</td>
<td>1. FFA Matchmaker Game</td>
</tr>
</tbody>
</table>

Materials Needed:

Pencil  
Computers  
FFA Website  
FFA Leadership PowerPoint  
FFA Matchmaker Game

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time and Small Group Work</th>
<th>Time</th>
</tr>
</thead>
</table>
| 1. Bell Work  
   a. What are some responsibilities of the FFA officers?  
     i. Answers will vary  
  2. Greet the students and give directions on bell work.  
   a. Tell the class, “Good Morning”  
     i. They should reply with “Good Morning, Mrs. Schultz!”  
     ii. “You have 4 minutes to complete the question of the day.”  
       1. At this time, the teacher will take attendance.  
  3. Leadership Roles in FFA  
   a. Chapter Officers Overview  
     i. Chapter officers serve a vital function in FFA. By taking a major leadership role, these students grow from the experience and benefit the chapter. It should be the officers' goal to lead by example and encourage other members to participate in chapter activities. The following are general duties expected of all officers.  
       1. A genuine desire to be a part of a leadership team.  
       2. A willingness to accept responsibility.  
       3. A sincere desire to work with all chapter members in meeting their leadership, personal and chapter goals.  
       4. A commitment to lead by example.  
       5. Knowledge and understanding of the chapter, state, and national FFA constitutions, bylaws and programs.  
       6. Working knowledge of the parliamentary procedures.  
       7. An ability to memorize the official ceremonies. | 4 Mins 18 Mins |
b. President: Stationed by the rising sun
   i. "The rising sun is the token of a new era in agriculture. If we will follow the leadership of our president, we shall be led out of the darkness of selfishness and into the glorious sunlight of brotherhood and cooperation."
      1. Preside over meetings according to accepted rules of parliamentary procedure.
      2. Appoint committees and serve on them as an ex-officio (non-voting) member.
      3. Coordinate the activities of the chapter and evaluate the progress of each division of the Program of Activities.
      4. Represent the chapter in public relations and official functions.

c. Vice President: Stationed by the plow
   i. "The plow is the symbol of labor and tillage of the soil. Without labor, neither knowledge nor wisdom can accomplish much. My duties require me to assist at all times in directing the work of our organization. I preside over meetings in the absence of our president, whose place is beneath the rising sun."
      1. Assume all duties of the president if necessary.
      2. Coordinate all committee work.
      3. Work closely with the president and advisor to assess progress toward meeting chapter goals.
      4. Establish and maintain a chapter resource file.

d. Secretary: Stationed by the ear of corn.
   i. "I keep an accurate record of all meetings and correspond with other secretaries wherever corn is grown and FFA members meet."
      1. Prepare and post the agenda for each chapter meeting.
      2. Prepare and present the minutes of each chapter meeting.
      3. Place all committee reports in the designated area
      4. Be responsible for chapter correspondence.
      5. Maintain member attendance and activity records and issue membership cards.
      6. Have on hand for each meeting:
         a. Official FFA Chapter Secretary's Book including minutes of the previous meeting.
         b. Copy of the Program of Activities including all standing and special committees.
         d. Copies of the chapter constitution and bylaws
         e. Submit a Chapter Secretary’s Book for competition

e. Treasurer: Stationed at the emblem of Washington.
   i. "I keep a record of receipts and disbursements just as Washington kept his farm accounts-carefully and accurately. I encourage thrift among the members and strive to build up our financial standing through savings and investments. George Washington was better able to serve his country because he was financially independent."
      1. Receive, record and deposit FFA funds and issue receipts.
      2. Present monthly treasurer's reports at chapter meetings.
      3. Collect dues and special assessments.
      4. Maintain a neat and accurate FFA Chapter Treasurer book or the computer software.
5. Prepare and submit the membership roster and dues to the National FFA Organization in cooperation with the secretary.
7. Submit a Chapter Treasurer's Book for Competition.

f. Reporter: Stationed by the flag.
   i. "As the flag covers the United States of America, so I strive to inform the people in order that every man, woman and child may know that the FFA is a national organization that reaches from the state of Alaska to Puerto Rico and from the state of Maine to Hawaii."
   1. Plan public information programs with local radio, television, newspaper and service clubs and make use of other opportunities to tell the FFA story.
   2. Release news and information to local and regional news media.
   3. Publish a chapter newsletter or website.
   4. Prepare and maintain a chapter scrapbook.
   5. Send local stories to area, district and state reporters.
   6. Send articles and photographs to FFA New Horizons and other national and/or regional publications.
   7. Work with local media on radio and television appearances and FFA news.
   8. Serve as the chapter photographer.

g. Sentinel: Stationed by the door.
   i. "Through this door pass many friends of the FFA. It is my duty to see that the door is open to our friends at all times and that they are welcome. I care for the meeting room and paraphernalia. I strive to keep the room comfortable and assist the president in maintaining order."
   1. Assist the president in maintaining order.
   2. Keep the meeting room, chapter equipment and supplies in proper condition.
   3. Welcome guests and visitors.
   4. Keep the meeting room comfortable.
   5. Take charge of candidates for degree ceremonies.
   6. Assist with special features and refreshments.

h. Advisor: Stationed by the owl
   i. "The owl is a time-honored emblem of knowledge and wisdom. Being older than the rest of you, I am asked to advise you from time to time, as the need arises. I hope that my advice will always be based on true knowledge and ripened with wisdom."
   1. Supervise chapter activities year-round.
   2. Inform prospective students and parents about the FFA.
   3. Instruct students in leadership and personal development.
   4. Build school and community support for the program.
   5. Encourage involvement of all chapter members in activities.
   6. Prepare students for involvement in contests and leadership programs.

i. Parliamentarian
   i. "It is my obligation to know and share information about parliamentary law and assist members in proper meeting procedure and etiquette so that we
can accomplish the business of the chapter. I assure that every member will be heard and that the majority will prevail.”

1. Be proficient with parliamentary procedure.
2. Rule on all questions of parliamentary conduct at chapter meetings.
3. Serve as a participant or an ex-officio member of the parliamentary procedure team.
4. Conduct parliamentary procedure workshops at the chapter level.
5. Chair or serve as an ex-officio member on the conduct of meetings committee.

j. Historian
   i. “Tradition and history are a source of pride for our organization. It is my duty to maintain a record of chapter achievements and promote excellence highlighting activities, events and accomplishments so that our chapter membership is motivated by our past successes and looks to future achievements.”
      1. Develop and maintain a scrapbook of memorabilia in which to record the chapter's history
      2. Research and prepare items of significance of the chapter's history.
      3. Prepare displays of chapter activities and submit stories of former members to the media.
      4. Assist the reporter in providing photography for chapter needs.

4. FFA Officer Matchmaker Game
   a. Students will get a deck of cards in which they will match the cards to the correct officer. Students should know their symbol and their role.
   b. There are extra cards in the deck and can be taken out depending on the time or what the teacher wants to focus on.

5. Conclusion
   a. I hope you have a better understanding of the roles of FFA officers. They all serve a distinct purpose and make FFA work.
   b. There are officers at every level, chapter, state, and national. If you plan to go join the FFA, I hope you consider becoming an officer.
FFA Officers
National, State, Local, Chapter

Mrs. Schultz

What is the primary responsibility of a national officer?

Serve the organization in local, state, national and international activities in a way that will inform, motivate and inspire FFA members, advisors, state staff, teachers and others to achieve the mission, strategies and core goals of the organization.

https://www.ffa.org/national-ffa-officers/
Chapter Officer Overview

Chapter officers serve a vital function in FFA. By taking a major leadership role, these students grow from the experience and benefit the chapter. It should be the officers' goal to lead by example and encourage other members to participate in chapter activities. The following are general duties expected of all officers.

1. A genuine desire to be a part of a leadership team
2. A willingness to accept responsibility.
3. A sincere desire to work with all chapter members in meeting their leadership, personal and chapter goals.
4. A commitment to lead by example.
5. A knowledge and understanding of the chapter, state and national FFA constitutions, bylaws and programs.
6. A working knowledge of parliamentary procedure.
7. An ability to memorize the official ceremonies.

http://sarcxieag.weebly.com/ffa-officer-responsibilities.html

President: Stationed by the rising sun

"The rising sun is the token of a new era in agriculture. If we will follow the leadership of our president, we shall be led out of the darkness of selfishness and into the glorious sunlight of brotherhood and cooperation."

1. Preside over meetings according to accepted rules of parliamentary procedure.
2. Appoint committees and serve on them as an ex-officio (non-voting) member.
3. Coordinate the activities of the chapter and evaluate the progress of each division of the Program of Activities.
4. Represent the chapter in public relations and official functions.
Vice President: Stationed by the Plow

"The plow is the symbol of labor and tillage of the soil. Without labor, neither knowledge nor wisdom can accomplish much. My duties require me to assist at all times in directing the work of our organization. I preside over meetings in the absence of our president, whose place is beneath the rising sun.

1. Assume all duties of the president if necessary.
2. Coordinate all committee work.
3. Work closely with the president and advisor to assess progress toward meeting chapter goals.
4. Establish and maintain a chapter resource file.

Secretary: Stationed by the ear of corn

"I keep an accurate record of all meetings and correspond with other secretaries wherever corn is grown and FFA members meet"

1. Prepare and post the agenda for each chapter meeting.
2. Prepare and present the minutes of each chapter meeting.
3. Place all committee reports in the designated area
4. Be responsible for chapter correspondence.
5. Maintain member attendance and activity records and issue membership cards.
6. Have on hand for each meeting:
   a. Official FFA Chapter Secretary's Book including minutes of the previous meeting.
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   d. Copies of the chapter constitution and bylaws
7. Submit a Chapter Secretary's Book for competition
Treasurer: Stationed at the emblem of Washington

"I keep a record of receipts and disbursements just as Washington kept his farm accounts-carefully and accurately. I encourage thrift among the members and strive to build up our financial standing through savings and investments. George Washington was better able to serve his country because he was financially independent."

1. Receive, record and deposit FFA funds and issue receipts.
2. Present monthly treasurer's reports at chapter meetings.
3. Collect dues and special assessments.
4. Maintain a neat and accurate FFA Chapter Treasurer book or the computer software.
5. Prepare and submit the membership roster and dues to the National FFA Organization in cooperation with the secretary.
7. Submit a Chapter Treasurer's Book for Competition.

Reporter: Stationed by the flag

"As the flag covers the United States of America, so I strive to inform the people in order that every man, woman and child may know that the FFA is a national organization that reaches from the state of Alaska to Puerto Rico and from the state of Maine to Hawaii."

1. Plan public information programs with local radio, television, newspaper and service clubs and make use of other opportunities to tell the FFA story.
2. Release news and information to local and regional news media.
3. Publish a chapter newsletter or website.
4. Prepare and maintain a chapter scrapbook.
5. Send local stories to area, district and state reporters.
6. Send articles and photographs to FFA New Horizons and other national and/or regional publications.
7. Work with local media on radio and television appearances and FFA news.
8. Serve as the chapter photographer.
Sentinel: Stationed by the door

"Through this door pass many friends of the FFA. It is my duty to see that the door is open to our friends at all times and that they are welcome. I care for the meeting room and paraphernalia. I strive to keep the room comfortable and assist the president in maintaining order."

1. Assist the president in maintaining order.
2. Keep the meeting room, chapter equipment and supplies in proper condition.
3. Welcome guests and visitors.
4. Keep the meeting room comfortable.
5. Take charge of candidates for degree ceremonies.
6. Assist with special features and refreshments.

Advisor: Stationed by the owl

"The owl is a time-honored emblem of knowledge and wisdom. Being older than the rest of you, I am asked to advise you from time to time, as the need arises. I hope that my advice will always be based on true knowledge and ripened with wisdom."

1. Supervise chapter activities year-round.
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3. Instruct students in leadership and personal development.
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6. Prepare students for involvement in contests and leadership programs.
Parliamentarian

“It is my obligation to know and share information about parliamentary law and assist members in proper meeting procedure and etiquette so that we can accomplish the business of the chapter. I assure that every member will be heard and that the majority will prevail.”

1. Be proficient with parliamentary procedure.
2. Rule on all questions of parliamentary conduct at chapter meetings.
3. Serve as a participant or an ex-officio member of the parliamentary procedure team.
4. Conduct parliamentary procedure workshops at the chapter level.
5. Chair or serve as ex-officio member on the conduct of meetings committee.

Historian

“Tradition and history are a source of pride for our organization. It is my duty to maintain a record of chapter achievements and promote excellence highlighting activities, events and accomplishments so that our chapter membership is motivated by our past successes and looks to future achievements.”

1. Develop and maintain a scrapbook of memorabilia in which to record the chapter’s history
2. Research and prepare items of significance of the chapter’s history.
3. Prepare displays of chapter activities and submit stories of former members to the media.
4. Assist the reporter in providing photography for chapter needs.
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| Assistant with special features and refreshments. |
| Keep the meeting room comfortable. |
| Keep the meeting room, chapter equipment and supplies in proper condition. |
| Advisor |
"The owl is a time-honored emblem of knowledge and wisdom. Being older than the rest of you, I am asked to advise you from time to time, as the need arises. I hope that my advice will always be based on true knowledge and ripened with wisdom."

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| **“It is my obligation to know and share information about parliamentary law and assist members in proper meeting procedure and etiquette so that we can accomplish the business of the chapter. I assure that every member will be heard and that the majority will prevail.”** | **“It is my obligation to know and share information about parliamentary law and assist members in proper meeting procedure and etiquette so that we can accomplish the business of the chapter. I assure that every member will be heard and that the majority will prevail.”** |

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Day 5
Mrs. Katelyn Schultz
Title: What does FFA look like at our high school? Lesson Time: 44 Minutes
Grade: 8th Grade Subject Area: Lab Science- Agriculture Education

Curriculum Standard(s)

| AFNR-BAS-2 | Relate the role of the FFA student organization in the students’ personal development |

Learning Objectives (Benchmark) and Assessment:

<table>
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<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
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<tr>
<td>1. Students will be able to take a tour of the Agriculture classroom at the high school, talk to the high school Agriculture teacher, and speak to the FFA members.</td>
<td>1. 3 Reasons Why YOU should join FFA in High School</td>
</tr>
</tbody>
</table>

Materials Needed:
- Pencil
- Computers
- FFA Website
- FFA Leadership PowerPoint
- FFA Matchmaker Game

Lesson Procedures:

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<th>Instructional Strategy: Individual Work Time and Small Group Work</th>
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<tr>
<td>1. Bell Work</td>
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</tr>
<tr>
<td>a. Who is the High School Ag Teacher at Lena Winslow High School?</td>
<td></td>
</tr>
<tr>
<td>i. Jacob Snook</td>
<td>4 Mins</td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td></td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. Field Trip to the High School Ag Classroom and Shop</td>
<td></td>
</tr>
<tr>
<td>a. Our High School is right across the street so it will take us a couple minutes to get there.</td>
<td>3 Mins</td>
</tr>
<tr>
<td>4. Today, we are headed over to the high school where Mr. Snook will be talking with everyone about the Agriculture Classes and FFA at the high school level.</td>
<td></td>
</tr>
<tr>
<td>a. Leave all your stuff at your desk and line up at the door quietly.</td>
<td></td>
</tr>
<tr>
<td>5. Mr. Snook Talk</td>
<td>15 Mins</td>
</tr>
<tr>
<td>a. Mr. Snook Talk about the variety of classes offered at the high school.</td>
<td></td>
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<tr>
<td>i. H4205 ANIMAL SCIENCE, 1 year,(can take one or both semesters ) 1 credit. A student must have junior or senior status in order to get the dual credit with Highland Community College. (must take both semesters of the class to get the dual credit)</td>
<td></td>
</tr>
<tr>
<td>1. Do you like animals? Do you want to learn about livestock and pets? This is a year-long course designed to provide basic knowledge of animal science. Topics covered in the classroom include genetics, nutrition, animal health, reproduction, small animals(dogs/cats)</td>
<td></td>
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livestock (cattle/sheep/pigs, etc.) companion animals such as horses and draft animals and exotic animals (tropical fish/chinchilla's/pet birds, whales/sharks etc.). Major hands-on activities include designing and carrying out chick nutrition experiments, processing piglets, animal dissection, building a DNA model and building a “visible horse skeleton.” There is also a unit on veterinary medicine. This course will provide a strong background of information for students to gain practical experience in the field of animal science.

2. *This class counts toward your science credit for graduation

ii. H8000 INTRODUCTION TO AGRICULTURE INDUSTRY 1 year, 1 credit
No prerequisite.
1. This is a beginning course that introduces the student to the major areas of agriculture. Subject matter includes basic concepts in livestock (beef, dairy, poultry, etc.), the FFA organization, woodworking, electricity, computer aided design (CAD), metalworking, SAE's and Illinois agriculture and safety in the shop. Major projects completed during the course include the wooden footstool, metal dustpans, hatching chickens and electrical wiring projects. Students will have the opportunity to get a “taste” of many different aspects of the agriculture industry. All students will be encouraged to join FFA and participate in extra field trips, conferences and competitions.

iii. H8200 AGRICULTURAL CONSTRUCTION and TECHNOLOGY
1. 1 year (can take one or both semesters), 1 credit
2. Prerequisite: Intro to Agriculture Industry or instructor permission
3. This course focuses on the knowledge, hands-on skills, and workplace skills applicable to construction in the agricultural industry. Major units of instruction include: personal safety, hand tool ID, power tool usage, construction skills in carpentry, concrete, safety and painting. Improving hobby or workforce woodworking skills will be a focus. Students will make projects such as picture frames, coat racks, workbenches, and build a model house as well as build projects of their own choosing. Examples of projects students in the past have built include Adirondack chairs, birdhouses, gun racks, pet houses and toy gifts. Participation in FFA student organization activities and Supervised Agricultural Experience (SAE) projects is an integral course component for leadership development, career exploration and reinforcement of academic concepts.

iv. H8700 NATURAL RESOURCES MANAGEMENT and CONSERVATION, (Wildlife) 1 year, 1 credit. No prerequisite.
1. This class will be offered every other year rotating with landscape/Floral Design and Horticulture. Not offered during the 2013-2014 school year
2. This course develops management and conservation skills in understanding the connection between agriculture and natural resources. Student’s knowledge and skills are developed in: understanding natural resources and its importance, fish, wildlife, and forestry management, sport hunting, small mammals (raccoons, fox etc.) large hoofed mammals, waterfowl and raptors, Illinois State
parks, tracking and outdoor survival skills. Career exploration will be discussed including: park ranger, game warden, campground manager, forester, conservation officer, wildlife manager, and related occupations. Improving computer and workplace skills will be a focus. Participation in FFA student organization activities and Supervised Agriculture Experience (SAE) projects is an integral course component for leadership development, career exploration and reinforcement of academic concepts.

v. H8900 LANDSCAPE/FLORAL DESIGN 1 semester, 1/2 credit. No prerequisite.
1. A student must have junior or senior status in order to get the dual credit with Highland Community College. (must take both Landscape/floral design and Horticulture to get the dual credit)
2. This class will be offered every other year, rotating with Natural Resources Management and Conservation.
3. Have you ever wanted to improve the look of a yard with trees, flowers or decking but weren’t sure how to? Have you ever wondered what it would take to make a corsage for a dance or bouquet for Mother’s Day? This class will answer those questions for you! You will learn the principles behind landscape design and learn how to design your own landscape for both the front and back of your home. You will learn how to establish bedding plants and where to put the ornamental fish pond as well as how to care for your landscape once it has been established. You will be using a computer program, in which you select a home and then landscape virtually around it.
4. The second segment of the course will introduce you to the art and business of floral design. You will learn how to match colors, textures and shapes of flowers in designs. You will make your own bud vase, corsage, line design, vase arrangement, centerpiece and holiday design. You will learn how to price and market your floral designs as well as how to tie a professional bow. College Credit If you are a Jr. or Sr. who is taking this course you have the opportunity to get college credit for it at Highland Community College. You must take both Introduction to Horticulture and Landscape/Floral design in order to get this credit.

vi. H7400 HORTICULTURE 1 semester, 1/2 credit. No prerequisite.
1. This class will be offered every other year along with Natural Resources Management and Conservation.
2. A student must have junior or senior status in order to get the dual credit with Highland Community College. (must take both Landscape/floral design and Horticulture to get the dual credit)
3. This is a semester-long introductory course designed to provide basic knowledge concerning the art and science of growing plants. Topics covered in the classroom will include plant parts and functions, growing vegetables, starting plants from existing plants, fruit production, greenhouse structures, growing media and lawn/turf grasses. Hands-on activities/labs in vegetable production, bedding plant production, houseplant production and general plant care will also be covered. We will spend extensive time working with plants
for the greenhouse as well as in establishing a perennial garden and working with the school orchard.

vii. H8500 SMALL ENGINES, 1 semester, 1/2 credit. Orientation to Agriculture is a prerequisite.
1. During the first semester students will study several types of small engines and their basic systems, but Briggs and Stratton will be the engines we rebuild. Skills learned in this class will help students succeed in any of the growing mechanical fields in today's demanding job market. Expectations in this class will be for each student to successfully disassemble and reassemble two engines, take 10 quizzes and 6 major tests. Safety tests and glasses will be required. Materials needed: Students will need two Briggs and Stratton 4 cycle engines. (Purchase engines at garage sales or auctions if you need to locate an engine.) They will be required to have both engines running when they are completed so any parts needed are the responsibility of the student.

viii. H8600 WELDING TECHNOLOGY, 1 semester, 1/2 credit. Small engines is a prerequisite.
1. During the second semester students will study AC-DC, Oxyacetylene, MIG and Tig welding. Today's industry relies heavily on the many forms of welding and related grinding operations. At this point in time the job market is in great demand for skilled metal workers. Students will develop knowledge of how to: measure, read welding blueprints, maintenance equipment, practice safety and produce 50 different welds. Expectations for this class will be: 50 required welds, 10 quizzes and 6 major tests. Upon completion of this course a student will be able to communicate the processes and safety needed to produce the welds above. Safety tests and glasses will be required.

ix. H8400 METAL MACHINING, 1 year, 1 credit. Orientation to Agriculture is a prerequisite.
1. Students enrolled in this course will learn the basic operations of the metal lathe, vertical milling machine, sheet metal floor equipment and different hand held measuring and shaping tools associated with the above mentioned tools. (micrometers, Vernier calipers, JO-blocks, hole gages and telescoping gauges) Students will learn thread production, knurling and tapering on the metal lathe and milling surfaces, flat as well as at an angle on the milling machine. Methods used to teach will include lecture, homework, videos, small projects, quizzes and tests. The final nine weeks each student must produce a large project such as a vice, clamp or another project that has been okayed by the instructor as meeting the criteria established in this course. Students will be required to wear safety glasses and take safety tests before operating the machinery. Students pay for materials used to build individual final projects (approximately $25.00).

x. H8100 ARCHITECTURAL DESIGN, 1 semester, 1/2 credit. Mechanical Design is a prerequisite.
1. This is an introduction to the fundamentals of Architectural drawing. Emphasis is put on the development and understanding of design
principles of architecture, floor, electrical, elevation, and detail developments, along with dimensioning and line quality techniques. A prerequisite to one of the fastest growing occupations today - Computer-Aided Drafting.

xi. H8300 MECHANICAL DESIGN, 1 semester, 1/2 credit. No prerequisite. Algebra I is suggested
1. Students enrolled in this course will learn to visualize in three dimensions, to build technical imaginations, to think precisely, and to understand the language of Industry. Students will use standards set by American Standards Institute (ANSI). This course will start with hand drawings to establish for the instructor where each student is at. You will us three dimensional thinking. It will then quickly move to the computer to aid the student in precision layouts that are professionally produced. Students will learn to use fractions; decimals and change their units of measure to metric if need be. Students must produce the required drawings in a given amount of time. Students will draw three view drawings, dimensioned drawings; stretch-out using the computer to project the project. Computers and AutoCAD Light software will be our drawing medium.

xii. SUPERVISED AGRICULTURAL EXPERIENCE (SAE) INDEPENDENT STUDY, 1 quarter, 1/4 credit (must be taken 2nd or 3rd quarter). Freshmen not eligible. Students must have completed one Ag course during the previous year and cannot be enrolled in an Agricultural course that year due to schedule conflict. Students must be pre-approved by the Ag instructor showing that they have a valid agricultural project. Students must talk to the instructor about this course in January before taking the course. Your instructor will be visiting you at your SAE. This course can only be taken two times.
1. This course is designed to establish knowledge and skills in various agricultural careers. Students will gain credit by establishing a project at their home, at a local business, or at their school usually after normal school hours. Example projects may include, but are not limited to working at a garden center, raising vegetables/grain/livestock, conducting: business agreements, budgets, inventories, daily activities, hours worked, income and expenses, total earnings, depreciation, and net worth. SAE records should be evaluated at least once per month. In addition, SAE lessons are integrated in each agricultural course. SAE participation can lead to full time employment, scholarships, and awards through FFA. We will use the computer software provided by the FFA.

b. The FFA Chapter
i. Lena-Winslow is proud to have been home to an FFA Chapter for over sixty years! One of fifteen schools in section one we annually have between 40-60 FFA members at our school. FFA members have the opportunity to participate in the following CDE’s throughout the school year:
1. Greenhand Quizbowl
2. Agronomy (Crops)
3. Dairy Products
4. Job interview
5. Public Speaking
6. World Dairy Expo Judging
7. Ag Sales
8. Poultry Judging
9. Meats Judging
10. Dairy Cattle Judging
11. Livestock Judging
12. Ag Mechanics
13. Trapshooting
14. Section Banquet
15. Envirothon
16. Proficiency Interviews
17. State and American Degree earners

ii. In addition we participate in the following state/national events:
1. State Convention
2. National Convention
3. Ag Legislative Day
4. 212 Conference
5. FFA Leadership Camp
6. Section One Summer Fair
7. Section One Fall Grain Fair
8. Washington Leadership Conference

iii. Our Chapter has many local events that we participate in as well:
1. Monthly Meetings
2. Section Dodgeball
3. Section Volleyball
4. Section Basketball
5. National FFA Week
6. Tractor Day
7. Ag Day
8. Canned Food Collection
9. Fruit, cheese, and Sausage Sales
10. Strawberry sales

iv. Our Chapter has been allowed to farm a 45-acre plot of ground adjacent to the school for several years. Each year the chapter members elect a student “plot manager” who helps make decisions on what and when to plant/harvest and then use their equipment to get the job done. Area businesses such as FS and Pearl City Co-op also generously donate their expertise and time to help make the plot successful. Proceeds from the plot go to pay for chapter activities, conference attendance, the FFA Foundation donation and other expenses.

c. Time For Questions
   i. Determined by the students

6. Conclusion
   a. Walk back to the junior high school.
   b. Students will complete the exit ticket that states
      i. What are 3 reasons to be part of FFA or agriculture in general?
NAME: ____________________

EXIT TICKET:
3 Reasons to be a part of FFA or Agriculture

1. __________________________________________________________

2. __________________________________________________________

3. __________________________________________________________

Will you join FFA or Take an Ag class?    YES    NO

NAME: ____________________

EXIT TICKET:
3 Reasons to be a part of FFA or Agriculture

1. __________________________________________________________

2. __________________________________________________________

3. __________________________________________________________

Will you join FFA or Take an Ag class?    YES    NO
<table>
<thead>
<tr>
<th>Day</th>
<th>Essential Question</th>
<th>Objective</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 6:</td>
<td>What is a Supervised Agricultural Experience (SAE)?</td>
<td>Students will be able to research SAE assignments and pick one that is of interest to them. Students will then discuss how they feel it would need to be changed or how they would make it their own.</td>
<td>SAE Design/Career Plan Part 1</td>
</tr>
<tr>
<td>Day 7:</td>
<td>What are some careers that interest you in agriculture or agribusiness?</td>
<td>Students will be able to pick a career that interests them in the agricultural field and identify what kind of education they need for their career.</td>
<td>SAE Design/Career Plan Part 2</td>
</tr>
<tr>
<td>Day 8:</td>
<td>What is the role of Agriculture in the state of Illinois?</td>
<td>Students will be able to list the commodities that come from the state of Illinois and list the agriculture job available in Illinois.</td>
<td>Home Grown, Part 1</td>
</tr>
<tr>
<td>Day 9:</td>
<td>What is the role of Agriculture in Stephenson County Illinois?</td>
<td>Students will be able to list the commodities that come from Stephenson County and how these commodities affect them.</td>
<td>Home Grown, Part 2</td>
</tr>
<tr>
<td>Day 10:</td>
<td>What is the role of Agriculture in Lena, Illinois and Winslow, Illinois?</td>
<td>Students will be able to list the commodities and agricultural businesses that reside in their hometown or Lena, IL, and Winslow, IL.</td>
<td>Home Grown, Part 3</td>
</tr>
</tbody>
</table>
Day 6  
Mrs. Katelyn Schultz
Title: What is a Supervised Agricultural Experience (SAE)?  
Lesson Time: __ 44 Minutes
Grade: 8th Grade  
Subject Area: Lab Science- Agriculture Education

Curriculum Standard(s)
| AFNR-BAS-3 | Explore, develop, and implement the Supervised Agricultural Experience (SAE) program by researching careers in agriculture and agribusiness |

Learning Objectives (Benchmark) and Assessment:

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<th>Assessment(s)</th>
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<td>1. Students will be able to research SAE assignments and pick one that is of interest to them. Students will then discuss how they feel it would need to be changed or how they would make it their own.</td>
<td>1. SAE and Career Planning Part 1</td>
</tr>
</tbody>
</table>

Materials Needed:
- Pencil
- Computers
- SAE Website
- SAE Video
- Career Exploration and Planning Activity

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time and Small Group Work</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bell Work</td>
<td>4 Mins</td>
</tr>
<tr>
<td>a. What do you want to do when you grow up?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td></td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>3. What is a Supervised Agricultural Experience (SAE)?</td>
<td>15 Mins</td>
</tr>
<tr>
<td>a. According to <a href="https://thecouncil.ffa.org/sae/">https://thecouncil.ffa.org/sae/</a></td>
<td></td>
</tr>
<tr>
<td>i. Beginning in 2011, the National Council for Agricultural Education held a national summit and began work on determining what the driving forces were behind high quality experiential, work-based and project-based learning in agricultural education. This was a need brought on by what appeared to be a lower number of students being exposed to the SAE component of agricultural education through the local classroom. Over the course of four years, a national committee met and held discussions with the intent of renewing the profession’s commitment to SAE as an essential component of student learning that should be used with every student in school-based agricultural education. The committee recognized that in the context of today’s agricultural education programs many teachers and students were facing significant barriers to making the commitment to this level of experiential learning a reality.</td>
<td></td>
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</tbody>
</table>
a. Limited teacher time based on enrollment numbers to commit adequate time to supervision
b. Less students coming from agricultural production backgrounds and less employment availability in the agriculture sector for youth
c. Lack of resources to help students create ideas and SAE programs
d. Perceived administrative barriers to what types of programs students could engage with at a local level
e. Lack of understanding in how SAE could contribute to evidence of student achievement beyond awards programs

ii. Therefore, in 2015 the committee submitted to the Council for approval a document that would set forth philosophies and guiding principles intended to address such barriers and provide a path to 100% SAE engagement with students in the modern classroom. The following are some highlights of the work that was adopted:

1. There should be an expansive set of SAE types for students to choose from such as:
   a. Foundational SAE
      i. Career exploration & planning
      ii. Personal financial planning and management
      iii. Workplace Safety
      iv. Employability skills for college and career readiness
      v. Agricultural Literacy
   b. Immersion SAE
      i. Entrepreneurship/Ownership
      ii. Placement/Internships
      iii. Research (Experimental, Analytical, Invention)
      iv. School Business Enterprises
      v. Service Learning

iii. To assist instructors with implementation of SAE for ALL the Council undertook development of multiple resources for use in the classroom. A student and teacher guide to SAE for ALL along with individual learning guides associated with each component of the program are available at the link below. In addition to PDF files of these resources the Council has also provided an online platform for delivery of the same content to students. The Individual Learning Guide (online) link below will open the online course for student and teacher use.

4. The SAE Program for All
   a. SAE opportunities are truly endless and entirely based on exploring passions and career interests.
   b. Students will start with a Foundational SAE, then expand to include one or more Immersion SAEs.

5. Students will watch the Foundational SAE Video
   a. The Foundational SAE is conducted by all students in the agricultural education program including students who are on a four-year sequence and those who enroll for the semester.
   b. https://saeforall.org/foundational-sae/?wizard
      i. Career Exploration
      ii. Employability Skills for College and Career Readiness
6. Pass out the SAE for All INDEPENDENT LEARNING GUIDE Student Edition
   i.  [https://ffa.app.box.com/s/xnkpg1mkymz5yyzg5hkcclpn16h10x7l](https://ffa.app.box.com/s/xnkpg1mkymz5yyzg5hkcclpn16h10x7l)
      1. This will be a resource for the class. Students will use page 6 to work on part 1 of their SAE/Career Plan.

7. Career Exploration and Planning Activity
   a. The first and most important step in establishing your Foundational SAE is narrowing the overwhelming number of career possibilities into a few choices that fit your interests, values and abilities. The good news is there are a variety of tools to help with this process.
      i. Share via Google Classroom the Day 6.1 Career Exploration and Planning Activity
         1. This is a copy of page 6 from the SAE for All INDEPENDENT LEARNING GUIDE Student Edition.
            a. It is offered Google Classroom on a Google Document because the links are live and students can click on them to go to the Career Interest Inventories.
            b. Use the links below to complete at least two interest inventories.
               i. State provided career interest inventory
               ii. Ag Explorer - [https://www.agexplorer.com](https://www.agexplorer.com)
               iv. My Next Move - [https://www.mynextmove.org](https://www.mynextmove.org)
               v. Career Key - [https://www.careerkey.org](https://www.careerkey.org) (subscription required)

8. Conclusion
   a. What are some of the jobs you got?
      i. Answers will vary
   b. How far did you get on your career questions of the SAE?
      i. Answers will vary
   c. We will pick back up tomorrow and finish the questions and dive deeper into career planning.
What is a Supervised Agricultural Experience (SAE)?

Mrs. Schultz

According to https://thecouncil.ffa.org/sae/

Beginning in 2011, the National Council for Agricultural Education held a national summit and began work on determining what the driving forces were behind high quality experiential, work based and project based learning in agricultural education. This was a need brought on by what appeared to be a lower number of students being exposed to the SAE component of agricultural education through the local classroom. Over the course of four years a national committee met and held discussions with the intent of renewing the profession’s commitment to SAE as an essential component of student learning that should be used with every student in school based agricultural education. The committee recognized that in the context of today’s agricultural education programs many teachers and students were facing significant barriers to making the commitment to this level of experiential learning a reality.
Some of those barriers include:

Limited teacher time based on enrollment numbers to commit adequate time to supervision
Less students coming from agricultural production backgrounds and less employment availability in the agriculture sector for youth
Lack of resources to help students create ideas and SAE programs
Perceived administrative barriers to what types of programs students could engage with at a local level
Lack of understanding in how SAE could contribute to evidence of student achievement beyond awards programs

CONT.

Therefore, in 2015 the committee submitted to the Council for approval a document that would set forth philosophies and guiding principles intended to address such barriers and provide a path to 100% SAE engagement with students in the modern classroom. The following are some highlights of the work that was adopted:
Foundational SAE

Career exploration & planning
Personal financial planning and management
Workplace Safety
Employability skills for college and career readiness
Agricultural Literacy

Immersion SAE

Entrepreneurship/Ownership
Placement/Internships
Research (Experimental, Analytical, Invention)
School Business Enterprises
Service Learning
CONT.

To assist instructors with implementation of SAE for ALL the Council undertook development of multiple resources for use in the classroom. A student and teacher guide to SAE for ALL along with individual learning guides associated with each component of the program are available at the link below. In addition to PDF files of these resources the Council has also provided an online platform for delivery of the same content to students. The Individual Learning Guide (online) link below will open the online course for student and teacher use.

The SAE Program for All

SAE opportunities are truly endless and entirely based on exploring passions and career interests.

Students will start with a Foundational SAE, then expand to include one or more Immersion SAEs.
Students will watch the Foundational SAE Video

The Foundational SAE is conducted by all students in the agricultural education program including students who are on a four-year sequence and those who enroll for the semester.

https://saeforall.org/foundational-sae/?wizard

- Career Exploration
- Employability Skills for College and Career Readiness
- Personal Financial Management and Planning
- Workplace Safety
- Agricultural Literacy
Career Exploration and Planning Activity

The first and most important step in establishing your Foundational SAE is narrowing the overwhelming number of career possibilities into a few choices that fit your interests, values, and abilities. The good news is there are a variety of tools to help with this process.

1. Use the links below to complete at least two interest inventories.
   - State-provided career interest inventory
   - Ag Explorer - https://www.agexplorer.com
   - My Next Move - https://www.mynextmove.org
   - Career Key - https://www.careerkey.org (subscription required)
   - Your school's career planning system

2. Summarize your results in a document by completing the following statements.
   - My top five career areas of interest in priority order are …
   - I was happy to see (insert career area) on my list because …
   - I was surprised to see (insert career area) on my list because …

3. Reflect on your career inventory results by answering the following questions:
   - Which of the career areas on your list are, or are not a good fit for you?
   - In what ways do you agree or disagree with the list?
   - If one or more of your career areas is outside the industry of agriculture, what agricultural career pathway would be most closely related to the non-agricultural career? (i.e. medical profession - animal systems/veterinarian)
   - Which FFA activities and career development events best align to your career areas of interest?
   - What agriculture and academic courses should you take to be prepared for the next steps after high school? (check with your instructor or guidance counselor for suggestions)

4. Submit to your instructor the summary and reflection completed in items 2 and 3 above.
Day 7  Mrs. Katelyn Schultz
Title: What are some careers that interest you in agriculture or agribusiness?  Time: 44 Minutes
Grade: 8th Grade  Subject Area: Lab Science - Agriculture Education

Curriculum Standard(s)

| AFNR-BAS-3 | Explore, develop, and implement the Supervised Agricultural Experience (SAE) program by researching careers in agriculture and agribusiness |

Learning Objectives (Benchmark) and Assessment:

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<td>1. Students will be able to pick a career that interests them in the agricultural field and identify what kind of education they need for the career.</td>
<td>1. SAE and Career Planning Part 2</td>
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Materials Needed:

- Pencil
- Computers
- Career Exploration and Planning Activity

Lesson Procedures:

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<th>Instructional Strategy: Individual Work Time and Small Group Work</th>
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</table>
| 1. Bell Work  
   a. What do you want to do when you grow up?  
      i. Answers will vary  
   2. Greet the students and give directions on bell work.  
      a. Tell the class, “Good Morning”  
         i. They should reply with “Good Morning, Mrs. Schultz!”  
         ii. “You have 4 minutes to complete the question of the day.”  
            1. At this time, the teacher will take attendance.  
   3. Wrap up SAE and Career Planning Part 1 from yesterday.  
      a. Students should put their Career Exploration and Planning Activity  
         i. Remember the careers that you  
      b. Students can type directly into the document to answer the following reflection questions.  
         i. Summarize your results in a document by completing the following statements.  
            1. My top five career areas of interest in priority order are …  
            2. I was happy to see (insert career area) on my list because …  
            3. I was surprised to see (insert career area) on my list because …  
         ii. Reflect on your career inventory results by answering the following questions:  
            1. Which of the career areas on your list is, or is not a good fit for you?  
            2. In what ways do you agree or disagree with the list?  
            3. If one or more of your career areas are outside the industry of agriculture, what agricultural career pathway would be most closely related to the non-agricultural career? (i.e. medical profession - animal systems/veterinarian) | 4 Mins  
| 16 Mins |
4. Which FFA activities and career development events best align to your career areas of interest?

5. What agriculture and academic courses should you take to be prepared for the next steps after high school? (check with your instructor or guidance counselor for suggestions)

   c. Then, students will submit to your instructor the summary and reflection completed in items 2 and 3 above using the TURN IN button on Google Docs.

4. Career Planning
   a. Students will complete the Career Research Outline.
      i. Students will pick a career in Agriculture that interests them.
      ii. Students will then look at the job prospects:
          1. How does the job market look now and in the future for this career.
      iii. Students will look at the location of their job:
           1. Areas of the World, Country, State
           2. What specific businesses provide this type of career opportunity.
      iv. Students will look at the salary of their career choice:
           1. Ranges based on experience, education, skills
      v. Students will research the duties and responsibilities on the job.
      vi. Students will find the requirements of their high school in order to graduate.
      vii. Students will find the requirements of the college / trade school they want to go into
      viii. Then, students will find the requirements of their career and the path the college expects you to take.

5. Conclusion
   a. This is a time to start thinking about your career and future plans.
   b. If you have questions or need more time, we can set aside a time to meet.
   c. You will be registering for high school classes right after winter break.
      i. Are you prepared to make the decision?
      ii. Are you taking early bird?
      iii. How are you setting up your four years of high school so that you will be successful and prepared for life after high school?
Outline – Career Research Assignment

1. Career

   Career:

2. Job Prospects: how does the job market look now and in the future for this career.

   Current:

   Future outlook:

3. Location of jobs: areas of the world, country, state. What specific businesses provide this type of career opportunity.

   Geographical locations:

   Names of Businesses:

4. Salary: ranges based on experience, education, skill
5. Duties and responsibilities on the job. BE SPECIFIC! This will be the largest section.

6. What are the Lena Winslow High School requirements to Graduate?

7. What are the requirements of the college/trade school that you want to go into?

8. What are the requirements of the college/training required to prepare for a career? One specific program from higher education (secondary/post-secondary) institution. Include name, address and phone number for the school or training facility.

9. Sources of information – (at least 3 required) (write on the back of this sheet) name of book / website / article / journal / magazine, etc. date author pages etc.
Day 8
Title: What is the role of Agriculture in the state of Illinois? Time: 44 Minutes
Grade: 8th Grade Subject Area: Lab Science- Agriculture Education

Curriculum Standard(s)

| AFNR-BAS-4 | Recognize how agriculture meets human needs today, in the past, and for the future |

Learning Objectives (Benchmark) and Assessment:

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<td>1. Students will be able to list the commodities that come from the state of Illinois and list the agriculture job available in Illinois.</td>
<td>1. Home Grown, Part 1</td>
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Materials Needed:
Pencil
Computers
Home Grown Part 1
Illinois Agriculture PowerPoint

Lesson Procedures:

Instructional Strategy: Individual Work Time and Small Group Work

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<tbody>
<tr>
<td>4 Mins</td>
</tr>
<tr>
<td>18 Mins</td>
</tr>
</tbody>
</table>

1. Bell Work
   a. What crops are grown in Illinois?
      i. Answers will vary

2. Greet the students and give directions on bell work.
   a. Tell the class, “Good Morning”
      i. They should reply with “Good Morning, Mrs. Schultz!”
      ii. “You have 4 minutes to complete the question of the day.”
         1. At this time, the teacher will take attendance.

3. What agricultural goods are produced in Illinois?
   a. Illinois is a leading producer of soybeans, corn and swine. The state's climate and varied soil types enable farmers to grow and raise many other agricultural commodities, including cattle, wheat, oats, sorghum, hay, sheep, poultry, fruits and vegetables. Illinois also produces several specialty crops, such as buckwheat, horseradish, ostriches, fish and Christmas trees.
      i. What is a commodity?
         1. According to Merriam Webster Dictionary, a commodity is a raw material or primary agricultural product that can be bought and sold, such as copper or coffee.
      ii. What are the top 6 commodities in Illinois?
         1. Corn
            a. Illinois farmers rank second in the country in corn production. In 2009, Illinois farmers planted 12,000,000 acres of field corn, which produced over 2 billion bushels of little golden kernels. One bushel of corn weighs 56 pounds, meaning...
Illinois farmers hauled over 112 billion pounds of corn out of their fields. Now that is a lot of corn!

b. Where does it all go? Field corn is not the type of corn you eat on the cob. It is a special type of corn that has a hard outer shell and is full of starch. It is processed to make products you use every day. Processing means changing field corn into different usable products through a series of events.

c. The corn is soaked and milled (ground) so that the germ oil, starch, gluten and hulls can be separated. These items are then made into cornstarch, cooking oil, sweeteners, high fructose corn syrup, cereal, beverages and fuel. And that’s just the beginning!

2. Soybeans
   
a. Soybeans are the seeds of the soybean plant. They grow on the soybean plant in pods, like peas or peanuts. Also, like peas and peanuts, they are part of the legume family and a great source of protein and other essential nutrients. You can find soybeans in all sorts of food and industrial products making it one of the most versatile crops there is.

b. Soybeans are grown and eaten by people all over the world, but no country grows more soybeans than the United States.

3. Pork
   
a. Illinois currently ranks 4th in the U.S. for the number of pigs raised.

b. Illinois pig farmers produce nearly 2 BILLION pounds of pork each year. That’s more than 6 BILLION pork chops!

c. There are 2,000 farms in Illinois that raise more than 4.75 million pigs – 500,000 breeding pigs (sows and boars) and 4.25 million market pigs.

d. The pork industry contributes $1.8 billion to the Illinois economy annually, and it is directly connected to over 10,500 Illinois jobs.

e. Illinois pigs eat 155 million bushels of corn each year. Which equals about 911,000 acres of corn.

f. Pigs in Illinois also consume 1.55 million pounds of soybean meal each year, made from 28 million bushels of soybeans.

4. Wheat
   
a. Wheat is a grain (a plant that produces a dry edible seed called a kernel) used mostly for human consumption. Wheat is an annual grass plant that will grow 2 to 3 feet tall. It starts as a seed and begins to grow when there is enough moisture in the soil. The first signs of growth are tiny root hairs that stretch down into the soil while a small shoot pushes upward through the soil. Tissue within the wheat seed provides the plant with its first nourishment. As the plant grows, it uses the sun to make food in its leaves. The roots get food from the soil. Wheat grows many leaves and sends up 3-12 stems called tillers. A group of flowers, called a spike, develops at the top of each tiller and matures into the wheat head.
Kernels within the head grow and turn golden brown before harvest.

5. Cattle
   a. Our nation’s food security depends on growing our own food. Illinois’ economy depends on farms and rural communities that prosper. Each year, the Illinois livestock industry generates: $3.5 billion in economic activity, $292 million in state tax revenue, and 25,385 jobs.
   b. Growing a larger Illinois beef and livestock industry is important. A strong livestock industry gives farmers a greater competitive edge in regulation, technology, transportation and strategic marketing. Livestock is also the strongest domestic market for Illinois corn. Each year, the state’s livestock eats 118 million bushels worth of corn and 31 million bushels of soymeal meal.

6. Dairy Products
   a. Dairy cows are fascinating animals. They turn grass and grains into milk. Heifers are female dairy cattle that have not given birth to a calf. Once a heifer gives birth, it is called a cow. All female dairy cows must have a calf to produce milk. The gestation (pregnancy) period for cows is nine months. Newborn calves weigh about 80-100 pounds.
   b. Male dairy cattle are called bulls and do not produce milk. Milk provides your body with calcium, which is needed for healthy bones and teeth. Calcium also helps our muscles and nerves work properly, and helps blood clot. Milk products also provide us with carbohydrates, protein and Vitamin D. You should have 3 servings of nonfat or low-fat milk and milk products each day. One serving of dairy is equal to 1 cup of milk, yogurt or ice cream and 1 ½ -2 ounces of cheese. A 1,500 pound dairy cow eats 100 pounds of feed each day. This includes corn silage, hay, ground corn, soybean meal and vitamins/minerals. Dairy cows also drink 30-50 gallons of water each day. That is about an entire bathtub full of water. With all that eating and drinking, are cows stuffed? The simple answer is 'no'. They are eating to meet their energy (calorie) needs—they do not overeat. Young animals that are actively growing have greater requirements for protein than older animals.

4. What are the characteristics of a typical Illinois farm?
   a. According to the United States Department of Agriculture National Agricultural Statistics Service (USDA-NASS), as of February 2017, Illinois had 72,200 farms. Illinois farmland covers nearly 27 million acres -- about 75 percent of the state's total land area. The large number of farms, coupled with the diversity of commodities produced, makes it difficult to describe a typical operation. However, statistics provide some indication about what it means to farm in Illinois.
   b. The average size of an Illinois farm, including hobby farms, is 358 acres. Most farm acreage is devoted to grain, mainly corn and soybeans. Nearly 10 percent of Illinois farms have swine. Beef cows are found on about 23 percent of farms, while about 3 percent have dairy cows. Some farms produce specialty crops and...
livestock, including alfalfa, canola, nursery products, emus and fish. Many farming operations also support recreational activities such as hunting and fishing.

5. How does agriculture benefit Illinois' economy?
   a. Marketing of Illinois' agricultural commodities generates more than $19 billion annually. Corn accounts for 54 percent of that total. Marketing of soybeans contributes 27 percent, and the combined marketing’s of livestock, dairy and poultry generates 13 percent. The balance comes from sales of wheat and other crops, including fruits and vegetables.
   b. Billions more dollars flow into the state's economy from ag-related industries, such as farm machinery manufacturing, agricultural real estate, and production and sale of value-added food products. Rural Illinois benefits principally from agricultural production, while agricultural processing and manufacturing strengthen urban economies.

6. How are Illinois' agricultural commodities used?
   a. With 2,640 food manufacturing companies, Illinois is well-equipped to turn the state's crops and livestock into food and industrial products. In fact, the state ranks first in the nation with $180 billion in processed food sales. Most of these companies are located in the Chicago metropolitan area, which contains one of the largest concentrations of food-related businesses in the world.
   b. Illinois’ agricultural commodities also provide the base for such products as animal feed, ink, paint, adhesives, clothing, soap, wax, cosmetics, medicines, furniture, paper and lumber. Each year, 274 million bushels of Illinois corn are used to produce more ethanol than any other state -- about 678 million gallons. Illinois also markets other renewable fuels, including soybean-based biodiesel.

7. How does agriculture benefit from the state's geography and climate?
   a. Illinois measures about 400 miles from its northern border to its southernmost tip. Temperatures generally vary by 10 to 12 degrees from one end of the state to the other. Cold, fairly dry winters and warm, humid summers with ample rainfall allow the land to support many kinds of crops and livestock.
   b. Much of Illinois is comprised of fertile flat loess, left behind by glaciers and wind millions of years ago. About 89 percent of the state's cropland is considered prime farmland, ranking the state third nationally in total prime farmland acreage. Prime farmland is important because it provides an environmentally sound base for crop production. The central three-fourths of the state are especially well suited for growing crops, while hilly areas in the northwest and south provide excellent pasture for livestock.

8. Who farms?
   a. Although Illinois' food and fiber industry employs nearly 1 million people, there are only 75,087 farm operators, down from 164,000 in 1959. During the same time period, the average farm size more than doubled as sophisticated technology made many aspects of the industry less labor-intensive. Illinois farmers are generally more than 50 years old. Forty-nine percent hold jobs off the farm and consider farming their secondary occupation. Family farms still dominate, though some of these have incorporated.

9. What are other reasons for Illinois’ agricultural success?
   a. Illinois has a competitive edge over many other states due to its central location and superior transportation system. More than 2,000 miles of interstate highway and 34,500 miles of other state highway make trucking of goods fast and efficient. Chicago is home to the largest rail gateway in the nation, connecting eastern and western United States. The state boasts some 1,100 airports, landing areas and
heliports, including Chicago's O'Hare International, through which more than 65 million travelers pass annually. Illinois’ 1,118 miles of navigable waterways, including the Illinois and Mississippi rivers, make barge traffic an excellent option for shipment of grain to the Gulf of Mexico.

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   a. Illinois ranks third nationally in the export of agricultural commodities with $8.2 billion worth of goods shipped to other countries. Exports from Illinois account for 6 percent of all U.S. agricultural exports. Illinois is the nation's second leading exporter of both soybeans and feed grains and related products. Approximately 44 percent of grain produced in Illinois is sold for export. The Illinois Department of Agriculture promotes items produced, processed or packaged in Illinois through international and domestic marketing exhibits, trade missions, industry tours, publications, the Illinois Product Logo program and an electronic database for trade leads.

11. What Else?
   a. This will all be part of your Home Grown Project. You are making a poster on Illinois Agriculture. This is just part one but here are some things to think about.
      i. Do some research and see what you can find about Agriculture in the Illinois?
      ii. Is Agriculture different in Southern Illinois, Central Illinois, than it is in Northern Illinois?
      iii. How does Illinois compare to other states?
      iv. What is unique to Illinois Agriculture?

12. Conclusion
   a. We play apart in Agriculture. It is important that we advocate and get involved in agriculture.
   b. I will bring in poster board tomorrow. Use the Home Grown Outline to help you.
   a. If you have any questions let me know.

References

https://www2.illinois.gov/sites/agr/About/Pages/Facts-About-Illinois-Agriculture.aspx


http://www.agintheclassroom.org/TeacherResources/AgMags/Beef%20Ag%20Mag%20for%20Web_FINAL.PDF

http://www.agintheclassroom.org/TeacherResources/AgMags/Corn%20Ag%20Mag%20Smartboard.pdf

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http://www.agintheclassroom.org/TeacherResources/AgMags/AITC283J7%20Pork%20smartboard.pdf

http://www.agintheclassroom.org/TeacherResources/AgMags/Soybean%20Ag%20Mag%202019.pdf

http://www.agintheclassroom.org/TeacherResources/AgMags/Wheat_Smartboard.pdf
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What are the top 6 commodities in Illinois?

1. Corn
2. Soybeans
3. Pork
4. Wheat
5. Cattle
6. Dairy Products
Corn

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DAIRY PRODUCTS

Many dairy products can be found in the grocery store. These include milk, flavored milk, ice cream, cheese, butter, yogurt, cream cheese, sour cream, cottage cheese, and buttermilk.

ICE CREAM
Ice cream is a popular dessert. At any given time 4% of Americans have ice cream in their homes. Milk and cream are the essential ingredients in ice cream.

Most Americans prefer vanilla over any other flavor. What is your favorite flavor? Determine your &

Cheese
Cheese is another nutritious food made from milk. People crave cheese more than any other food, so it is not surprising that the average American eats over 37 pounds of cheese each year. That is easy to do considering cheese can be found in many of our favorite foods, such as pizza. There are many different varieties of cheese—something for everyone’s taste preference.

YOGURT
The two main ingredients in yogurt are milk and bacteria cultures. That is why yogurt is so good for your health. Bacteria cultures help fight infection and boost the immune system. There are many different varieties and flavors of yogurt. When you are at the grocery store, check them out. Yogurt is a fun way to add calcium to your diet.

Fun Facts
The ice cream sundae originated in Evanston, IL.

The Top 5 Milk Producing States Are:
1. California
2. Wisconsin
3. New York
4. Idaho
5. Texas

Illinois...
has over 680 licensed dairy herds. ranks 21st in milk production in the United States.
has 24 dairy processing plants that make a variety of delicious and nutritious dairy products for you.

What are the characteristics of a typical Illinois farm?

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Are many of Illinois' agricultural products exported to other nations?

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What else?

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- Do some research and see what you can find about Agriculture in the Illinois?
- Is Agriculture different in Southern Illinois, Central Illinois, than it is in Northern Illinois?
- How does Illinois compare to other states?
- What is unique to Illinois Agriculture?

Sources

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Illinois Agriculture
Homegrown Part #1

1. What agricultural goods are produced in Illinois?

________________________________________________________________________________

________________________________________________________________________________

2. What is a commodity?

________________________________________________________________________________

________________________________________________________________________________

3. What are the top 6 commodities in Illinois?

1. ____________________________

2. ____________________________

3. ____________________________

4. ____________________________

5. ____________________________

6. ____________________________

4. What are the characteristics of a typical Illinois farm?

________________________________________________________________________________

________________________________________________________________________________

5. How does agriculture benefit Illinois' economy?

________________________________________________________________________________

________________________________________________________________________________

6. How are Illinois' agricultural commodities used?

________________________________________________________________________________

________________________________________________________________________________
7. How does agriculture benefit from the state's geography and climate?

____________________________________________________________

____________________________________________________________

8. Who farms?

____________________________________________________________

____________________________________________________________

9. What are other reasons for Illinois' agricultural success?

____________________________________________________________

____________________________________________________________

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____________________________________________________________

____________________________________________________________

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____________________________________________________________

____________________________________________________________

12. Is Agriculture different in Southern Illinois, Central Illinois, then it is in Northern Illinois?

____________________________________________________________

____________________________________________________________

13. How does Illinois compare to other states?

____________________________________________________________

____________________________________________________________

14. What is unique to Illinois Agriculture?

____________________________________________________________

____________________________________________________________
Title: What is the role of Agriculture in Stephenson County Illinois?  
Time: 44 Minutes
Grade: 8th Grade  
Subject Area: Lab Science-Agriculture Education

AFNR-BAS-4 Recognize how agriculture meets human needs today, in the past, and for the future

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
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</thead>
<tbody>
<tr>
<td>1. Students will be able to list the commodities that come from Stephenson County and how these commodities affect them.</td>
<td>1. Homegrown, Part 2</td>
</tr>
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</table>

Materials Needed:
Pencil  
Computers  
Homegrown Part 2  
Stephenson County Agriculture PowerPoint  
Poster Board

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time and Small Group Work</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
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<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
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<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
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</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
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<tr>
<td>3. What agricultural is in Stephenson County?</td>
<td></td>
</tr>
<tr>
<td>a. Stephenson County Farm Bureau</td>
<td></td>
</tr>
<tr>
<td>i. The Stephenson County Farm Bureau has around 4450 total members, of which around 1150 have an active involvement in production agriculture. SCFB is led by a board of 15 at-large directors elected to 3-year staggered terms, along with a representative from the Young Leaders Committee elected to a 1-year term. Our mission statement is “To Educate and Advocate for Agriculture”. The organization’s programs and activities are driven by four Task Forces: Education &amp; Advocacy, Ag Production &amp; Marketing, Government &amp; Local Affairs, and Member Services &amp; Outreach, as well as our Young Leaders Committee for those members ages 18-35 involved in farming or agribusiness professions. These groups design and carry out the many activities of our organization.</td>
<td></td>
</tr>
<tr>
<td>ii. Education is one of the cornerstones of Farm Bureau, and locally SCFB is a primary partner in the Conservation &amp; Agricultural Partners (CAP)</td>
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</tbody>
</table>
Foundation, a local coalition of organizations focused on agricultural education in the classroom and to the general public. Brittani DeVries is the CAP Education Coordinator, and she works closely with area teachers and organizations to share agriculture’s story. Additionally, the SCFB Foundation is a charitable entity that provides scholarships for members continuing their education in various fields, along with teacher stipends; in 2017, the SCFB Foundation provided $9,500 in grants to deserving students and teachers in the county.

iii. Legislative and local government involvement is also a fundamental part of Farm Bureau. The Farm Bureau organization is recognized as one of the most influential organizations in both Springfield and Washington D.C., and FB members regularly visit both capitals lobbying in support of key ag issues. A very successful program to expand FB’s influence and impact is the IFB “Adopt-a-Legislator” program, where county Farm Bureaus ‘adopt’ an urban legislator from the Chicago area and develop a reciprocal relationship with that leader. The goal is to raise the legislator’s awareness and appreciation of ag issues, while helping the county Farm Bureau gain insight into the legislator’s urban district and its unique characteristics. SCFB enjoyed a great relationship with Senator Edward Maloney (D-18) for eight years prior to his 2012 retirement, and since 2013 we’ve been involved in a new AAL relationship with Representative Fran Hurley (D-35), whose district covers the same area of Chicago’s south side and suburbs.

b. University of Illinois Extension Office
   i. Illinois Extension provides practical translations of cutting-edge research to help people, businesses, and communities find answers to some of the most pressing issues of our modern world. Our work is guided by a desire to create meaningful progress toward addressing a select group of issues, which we call grand challenges.

c. Stephenson County Agriculture
   i. Compared to other counties, Stephenson County, IL has an unusually high number of Agriculture, Forestry, Fishing & Hunting (3.95 times higher than expected), Management of Companies & Enterprises (1.94 times), and Manufacturing (1.93 times) industries.

d. Crops in Stephenson County Illinois
   i. Grains, oilseeds, dry beans, dry peas
   ii. Tobacco
   iii. Cotton and cottonseed
   iv. Vegetables, melons, potatoes, sweet potatoes
   v. Fruits, tree nuts, berries
   vi. Nursery, greenhouse, floriculture, sod
   vii. Cultivated Christmas trees, short rotation, woody crops

e. Livestock, poultry, and products in Stephenson County
   i. Poultry and eggs
   ii. Cattle and calves
   iii. Milk from cows
   iv. Hogs and pigs
   v. Sheep, goats, wool, mohair, milk
   vi. Horses, ponies, mules, burros, donkeys
   vii. Aquaculture

f. Farm Statistics
i. Stephenson County is comprised of 564.18 square miles of land. Total land area of the state is 55,583.58 square miles. Stephenson County is located far north on the Wisconsin border. It is second in the state for milk cows. The population density is 86.8 persons per square mile as compared to the state’s 223 persons per square mile.

ii. Number of Farms - 965

iii. 2% of State Agriculture Sales

iv. 333 Acres Irrigated

v. 25th in receipts for crops in Illinois (2010)

vi. 71st in soybean acres in Illinois

g. Total Producers in Stephenson County 1,615

i. Sex
   1. Male 1,109
   2. Female 506

ii. Age
   1. <35 173
   2. 35 – 64 898
   3. 65 and older 544

h. Percent of farms that:
   i. Have internet access 82
   ii. Farm organically 1
   iii. Sell directly to consumers 5
   iv. Hire farm labor 30
   v. Are family farms 96

i. Top Crops in Acres
   i. Corn for grain 153,010
   ii. Soybeans for beans 79,567
   iii. Forage (hay/haylage), all 16,504
   iv. Corn for silage or greenchop 7,460
   v. Wheat for grain, all 2,480

j. Livestock Inventory (Dec 31, 2017)
   i. Broilers and other meat-type chickens 315
   ii. Cattle and calves 43,249
   iii. Goats 1,709
   iv. Hogs and pigs 55,443
   v. Horses and ponies 427
   vi. Sheep and lambs 1,858
   vii. Turkeys 41

k. Ag Businesses in Stephenson County
   i. Pearl City Elevator
   ii. Compeer Financial
   iii. Akins Energy
   iv. Eastland Grain and Feed
   v. FS Stephenson Service Company
   vi. Kent Feed Mill
   vii. ADM Grain
       Furst McNess
   viii. AJ Lena Maid Meats
   ix. Farm Service Agency
   x. Savenaca Cheese
xi. University of Illinois Extension  
   xii. Torkelson Cheese  
   xiii. Farm Bureau  
   xiv. Farm and Fleet  
   xv. Harbach Meats  
   xvi. Lena Milling Co  
   xvii. Jordan Ag Supply  
   xviii. Stamms Farm Systems  
   xix. Baker Precision Planter Works  
   xx. Skid Steer Specialties  
   xxi. USDA Service Center  
   xxii. High Plains Pork  
   xxiii. Lena Vet Clinic  
   xxiv. Pearl Valley Farms  
   xxv. Orangeville Vet Clinic  
   xxvi. Pro Source Electric  
   xxvii. Vita Plus  

I. What else can you name?  

4. What else?  
   a. This will all be part of your Home Grown Project. You are making a poster on Illinois Agriculture. This is part two, here are some things to think about.  
   b. Do some research and see what you can find about Agriculture in Stephenson County?  
   c. How is Stephenson County different from the counties around us, Jo Davies, Carroll, Ogle, and Winnebago?  
   d. What is unique to Stephenson County Agriculture?  

5. Conclusion  
   a. You should have ideas about Illinois Agriculture. Now we are going to focus on Stephenson County since this is the country we live in.  
   b. Use the Homegrown Outline to help you.  
   c. If you have any questions let me know.  

References  
https://stephensoncfb.org/  
https://extension.illinois.edu/jsw  
https://datausa.io/profile/geo/stephenson-county-il/  
Stephenson County Agriculture

... 

Mrs. Schultz

Stephenson County Farm Bureau

The Stephenson County Farm Bureau has around 4450 total members, of which around 1150 have an active involvement in production agriculture. SCFB is led by a board of 15 at-large directors elected to 3-year staggered terms, along with a representative from the Young Leaders Committee elected to a 1-year term. Our mission statement is “To Educate and Advocate for Agriculture”. The organization’s programs and activities are driven by four Task Forces: Education & Advocacy, Ag Production & Marketing, Government & Local Affairs, and Member Services & Outreach, as well as our Young Leaders Committee for those members ages 18-35 involved in farming or agribusiness professions. These groups design and carry out the many activities of our organization.
Cont.

Education is one of the cornerstones of Farm Bureau, and locally SCFB is a primary partner in the Conservation & Agricultural Partners (CAP) Foundation, a local coalition of organizations focused on agricultural education in the classroom and to the general public. Brittani DeVries is the CAP Education Coordinator, and she works closely with area teachers and organizations to share agriculture’s story. Additionally, the SCFB Foundation is a charitable entity that provides scholarships for members continuing their education in various fields, along with teacher stipends; in 2017, the SCFB Foundation provided $9,500 in grants to deserving students and teachers in the county.

Cont.

Legislative and local government involvement is also a fundamental part of Farm Bureau. The Farm Bureau organization is recognized as one of the most influential organizations in both Springfield and Washington D.C., and FB members regularly visit both capitals lobbying in support of key ag issues. A very successful program to expand FB’s influence and impact is the IFB “Adopt-a-Legislator” program, where county Farm Bureaus adopt an urban legislator from the Chicago area and develop a reciprocal relationship with that leader. The goal is to raise the legislator’s awareness and appreciation of ag issues, while helping the county Farm Bureau gain insight into the legislator’s urban district and its unique characteristics. SCFB enjoyed a great relationship with Senator Edward Maloney (D-18) for eight years prior to his 2012 retirement, and since 2013 we’ve been involved in a new AAL relationship with Representative Fran Hurley (D-35), whose district covers the same area of Chicago’s south side and suburbs.
University of Illinois Extension Office

Illinois Extension provides practical translations of cutting-edge research to help people, businesses, and communities find answers to some of the most pressing issues of our modern world. Our work is guided by a desire to create meaningful progress toward addressing a select group of issues, which we call grand challenges.

Stephenson County Agriculture

Compared to other counties, Stephenson County, IL has an unusually high number of Agriculture, Forestry, Fishing & Hunting (3.95 times higher than expected), Management of Companies & Enterprises (1.94 times), and Manufacturing (1.93 times) industries.
Crops in Stephenson County Illinois

1. Grains, oilseeds, dry beans, dry peas
2. Tobacco
3. Cotton and cottonseed
4. Vegetables, melons, potatoes, sweet potatoes
5. Fruits, tree nuts, berries
6. Nursery, greenhouse, floriculture, sod
7. Cultivated Christmas trees, short rotation, woody crops

Livestock, poultry, and products in Stephenson County

1. Poultry and eggs
2. Cattle and calves
3. Milk from cows
4. Hogs and pigs
5. Sheep, goats, wool, mohair, milk
6. Horses, ponies, mules, burros, donkeys
7. Aquaculture
**Farm Statistics**

Stephenson County is comprised of 564.18 square miles of land. Total land area of the state is 55,583.58 square miles. Stephenson County is located far north on the Wisconsin border. It is second in the state for milk cows. The population density is 86.8 persons per square mile as compared to the state’s 223 persons per square mile.

Number of Farms - 965

2% of State Agriculture Sales

333 Acres Irrigated


71st in soybean acres in Illinois

---

**Total Producers in Stephenson County**  1,615

Sex

Male 1,109

Female 506

Age

<35 173

35 – 64 898

65 and older 544
Percent of farms that:

- Have internet access 82
- Farm organically 1
- Sell directly to consumers 5
- Hire farm labor 30
- Are family farms 96

Top Crops in Acres

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- Soybeans for beans 79,567
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Stamms Farm Systems
Skid Steer Specialties
High Plains Pork
Pearl Valley Farms
Pro Source Electric

Compeer Financial
Eastland Grain and Feed
Kent Feed Mill
Furst McNess
Farm Service Agency
University of Illinois Extension
Farm Bureau
Harbach Meats
Jordan Ag Supply
Baker Precision Planter Works
USDA Service Center
Lena Vet Clinic
Orangeville Vet Clinic
Vita Plus
Sources

https://stephensoncfb.org/
https://extension.illinois.edu/jsw
https://datausa.io/profile/geo/stephenson-county-il/

What else?

This will all be part of your Homegrown Project. You are making a poster on Illinois Agriculture. This is part two, here are some things to think about:

- Do some research and see what you can find about Agriculture in Stephenson County?
- How is Stephenson County different from the counties around us, Jo Davies, Carroll, Ogle, and Winnebago?
- What is unique to Stephenson County Agriculture?
Stephenson County Agriculture
Homegrown Part #2

1. What is the Stephenson County Farm Bureau and what does it do?
   ________________________________________________________________
   ________________________________________________________________

2. What is the University of Illinois Extension office and what can it do for you?
   ________________________________________________________________
   ________________________________________________________________

3. What are the crops grown in Stephenson County, Illinois?
   1. __________________________
   2. __________________________
   3. __________________________
   4. __________________________
   5. __________________________
   6. __________________________
   7. __________________________

4. What are the Livestock, poultry, and products in Stephenson County, Illinois?
   1. __________________________
   2. __________________________
   3. __________________________
   4. __________________________
   5. __________________________
   6. __________________________
   7. __________________________

5. How many farms are in Stephenson County? Who are farmers, what are their genders and ages?
   ________________________________________________________________
   ________________________________________________________________
6. What are some Agricultural Businesses in Stephenson County?

________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

7. Do some research and see what you can find about Agriculture in Stephenson County?

________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

8. How does Stephenson County compare to other counties?

________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

9. What is unique to Stephenson County Agriculture?

________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
**Curriculum Standard(s)**

<table>
<thead>
<tr>
<th>Curriculum Standard(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFNR-BAS-4</td>
<td>Recognize how agriculture meets human needs today, in the past, and for the future</td>
</tr>
</tbody>
</table>

**Learning Objectives (Benchmark) and Assessment:**

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to list the commodities and agricultural business that reside in their hometown or Lena, IL and Winslow, IL.</td>
<td>1. Homegrown, Part 3</td>
</tr>
</tbody>
</table>

**Materials Needed:**

- Pencil
- Computers
- Homegrown Part 3
- Lena Winslow Agriculture PowerPoint
- Poster Board

**Lesson Procedures:**

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time and Small Group Work</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bell Work</td>
<td>4 Mins</td>
</tr>
<tr>
<td>a. What is the name of a farm in Lena or Winslow?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td></td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. What agricultural is in Lena and Winslow, Illinois?</td>
<td>18 Mins</td>
</tr>
<tr>
<td>a. Lena</td>
<td></td>
</tr>
<tr>
<td>i. Quite simply put, Lena is family friendly. Home to an award winning school district, active park district, library district, emergency services including fire, local healthcare facilities, police and ambulance, multiple homes of worship and business services to support all the essential family needs, Lena offers the perfect place for you to call home. We believe you will find Lena’s rural setting, low cost-of-living and commitment to a high quality of life worthy of your strong consideration</td>
<td></td>
</tr>
<tr>
<td>b. Wind Farm</td>
<td></td>
</tr>
<tr>
<td>i. Location Stephenson County, Illinois</td>
<td></td>
</tr>
<tr>
<td>ii. Completion date Summer 2009</td>
<td></td>
</tr>
<tr>
<td>iii. Wind power 100.5 MW capacity, using 67 ACCIONA Windpower 1.5 MW wind turbine generators</td>
<td></td>
</tr>
<tr>
<td>iv. Projected CO2 emissions avoided - Approximately 176,000 tons annually</td>
<td></td>
</tr>
<tr>
<td>v. Collaborators- EcoEnergy, The Morse Group, ACCIONA</td>
<td></td>
</tr>
</tbody>
</table>
c. Solar Energy
   i. Stateline Solar is a cutting edge solar installation company. Our solution is
to give our customers an easy, stress-free, turn key product that they will
reap immense benefits from. We pride ourselves in educating our
customers 100% to make a fully informed decision. We turn a complicated,
stressful decision into an easy commitment to create clean, green,
sustainable energy.

d. Torkelson Cheese
   i. Torkelson Cheese is a producer of “World Champion” cheese, celebrating
over 30 years in manufacturing and marketing of high quality cheese. We
pride ourselves in our standards of quality, dependability, customer
service, and competitive prices.

e. AJ’s Lena Maid Meats
   i. Providing high quality, good old fashioned Country style meats you will
truly enjoy. Owned by Laverne and Marcia Pax, AJ’s Lena Maid Meats
was founded over 50 years ago, it has earned a reputation for high quality,
locally raised fresh meats, sugar cured hams and bacon and a wide
selection of specialty sausage products.
   ii. Over the years, AJ’s Lena Maid products have competed in Quality Meat
Shows, winning many championships at State and National levels. If you
are looking for high quality meats, cut the way you want or the many
specialty cured meats and sausage products with that “Old Country” flavor,
AJ’s Lena Maid Meats is the place to stop.

f. Adkins Energy
   i. Adkins Energy is a dry mill corn-to-ethanol and -biodiesel production facility
located in northwest Illinois. The concept for our business originated in the
mid 1990s as a way to add value to corn for local producers. Development
efforts by Pearl City Elevator, a local agricultural cooperative, and the
Adkins Energy Cooperative eventually led to the formation of Adkins
Energy LLC. We remain one of the few cooperatively owned ethanol plants
in the country.
   ii. Our strength and focus is on operational consistency, resulting from
developing individual employee skills and emphasizing a safe and healthy
work environment.
   Since starting our plant up in 2002, we have achieved, and often
exceeded, many operational milestones:
   1. Increasing yield, output and efficiencies
   2. Diversifying product offerings
   3. Researching next-generation technologies
   4. Growing shareholder value

g. Pearl City Elevator
   i. A Committed Cooperative For 100 years, Pearl City Elevator has been
partnering with our farmer producers in Northwest Illinois and Southern
Wisconsin. June 3rd, 2018 marks the 100th business anniversary for Pearl
City Elevator, Inc. Our full service agricultural cooperative has developed a
heritage of hard work and learning by doing. Each member of our
employee team and board of directors is working together to bring success
to our company and most importantly our producers. Working together to
develop marketing options for the crops they produced, ensuring the local
producers of necessary input products and manufacturing feed for the
livestock raised. Learning by doing is clearly demonstrated by PCE’s focus on recognizing and meeting our producers’ needs.

h. Stephenson County Service Co.
   i. The FS brand represents a standard of excellence for agricultural and energy-related products. It’s the people who represent the FS brand that set it apart. Always professional and dependable, FS specialists are trusted advisors who understand local needs.
   ii. FS companies are located in the Midwest and northeastern United States and in Ontario, Canada. Local FS Member Companies provide farm and non-farm customers with fuels, lubricants, propane, plant nutrients, crop protection, seed, structures, equipment, and grain marketing assistance. FS teams deliver unmatched technical expertise and a genuine interest in partnering in our customers’ success. FS Crop Specialists act as trusted advisors in day-to-day farm operations. FS Energy Specialists offer reliable heating, fueling and lubrication solutions to farm and non-farm customers.
   iii. FS companies are part of the GROWMARK System, and strive to be the best agricultural cooperative system in North America. FS employees are always ready to do more to move operations forward and never stop asking, "What's next?"

i. T.A.H Livestock, INC.
   i. Welcome to T.A.H. Livestock's home on the Internet. Locally owned and operated, we are located 2 miles south of Winslow on Illinois Hwy. 73. Since our origin in 1989, we have strived to become your livestock marketing choice in this area, specializing in Dairy Cattle. We believe we have been quite successful in that regard and appreciate our customers great support!!
   ii. While we no longer hold monthly Horse Auctions, we still maintain connections to the Equine community and will continue to provide some links to various Breed organizations, Penning and Sorting organizations and Special Equine events for our "horse friends" and customers. Those links and special events can be viewed by clicking here to go to our Equine page. In an effort to provide better service to our customers, we have completed many facility improvements since our beginning and continue to do so today.
   iii. We are a licensed and bonded livestock market operating under the USDA Packers and Stockyards Administration.
   iv. Our goal is to bring our livestock customers, both the seller and buyer, together in an efficient sales environment that is beneficial to each of them.

j. High Plains Pork
   i. Welcome to High Plains Pork! We are a family-operated independent pig farm located in Winslow, Illinois. We raise 3400 acres of corn to feed our 4600 sows and their offspring.
   ii. It is the mission of High Plains Pork, INC to efficiently and competitively produce lean, quality-assured pork and to strive for continual improvement in all aspects of our business, including the personal and professional growth of our employees and their families. It is also our mission to consistently adapt to new technologies and management skills in all phases of production, and to exhibit dedication, professionalism and a sincere concern for the environment and the animals in our care.
k. Assist Natural Products and Services
   i. It all starts with the water your animals drink.
   ii. For the past decade, Assist has partnered with some of the world’s largest poultry, dairy, beef and swine operators to identify problems with the water animals drink, its impact on animal nutrition and its influence in production environments.
   iii. Cleaner, better quality water means more payable production pounds, healthier animals, less feed and so much more. Our specially engineered amino acids, micronutrients and probiotics work in tandem with water to dramatically improve gut health and beneficial microbes that make the digestion process more efficient. Our environmental enzymes work with water to accelerate the growth of beneficial bacteria that outcompete unwanted pathogens and dangerous bacteria that impact animal health.

l. Some of the Farms
   i. Kempel Bros.
   ii. Klever Farms
   iii. Mau Farms
   iv. High Plains Pork
   v. Kent Farms
   vi. Wernacres
   vii. Bier Blume Farms
   viii. Bonnet Farms
   ix. Wishful Acres Farms
   x. Mahon Farms Pioneer Seeds

m. Businesses
   i. Skid Steer Specialties
   ii. Down on the Farm Toys
   iii. Lena Milling
   iv. Community Bank
   v. Citizens State Bank
   vi. Lena Vet Clinic
   vii. Stamm Farm Systems

n. What else?
   i. Do some research and see what you can find about Agriculture in the Lena/Winslow area?
   ii. Does your family farm? Tell us about it on your Home Grown Poster
   iii. Where do you live?
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   v. Where do you go grocery shopping?
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4. Conclusion
   a. You should have ideas about Illinois Agriculture and Agriculture in Stephenson County. Now we have focused on the Lena and Winslow area since this is where we live.
   b. Use the Homegrown Outline to help you.
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References

https://villageoflena.com/

https://www.acciona.com/

https://torkelsoncheese.com/

http://www.ajslenamaidmeats.net/index.html

https://www.adkinsenergy.com/

https://pce-coops.com/

https://www.stephensonfs.com/

http://www.tahlivestock.com/

https://www.facebook.com/HighPlainsPork/

https://assist-nps.com/about/
Lena/Winslow Agriculture

Mrs. Schultz

Lena

Quite simply put, Lena is family friendly. Home to an award winning school district, active park district, library district, emergency services including fire, local healthcare facilities, police and ambulance, multiple homes of worship and business services to support all the essential family needs, Lena offers the perfect place for you to call home. We believe you will find Lena’s rural setting, low cost-of-living and commitment to a high quality of life worthy of your strong consideration.
Wind Farm

Location Stephenson County, Illinois
Completion date Summer 2009
Wind power 100.5 MW capacity, using 67 ACCIONA Windpower 1.5 MW wind turbine generators
Projected CO2 emissions avoided - Approximately 176,000 tons annually
Collaborators- EcoEnergy, The Morse Group, ACCIONA
https://www.accionainc.com/

Solar Energy

Stateline Solar is a cutting edge solar installation company. Our solution is to give our customers an easy, stress-free, turn key product that they will reap immense benefits from. We pride ourselves in educating our customers 100% to make a fully informed decision. We turn a complicated, stressful decision into an easy commitment to create clean, green, sustainable energy.

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https://pce-coops.com/
Stephenson County Service Co.

The FS brand represents a standard of excellence for agricultural and energy-related products. It's the people who represent the FS brand that set it apart. Always professional and dependable, FS specialists are trusted advisors who understand local needs.

FS companies are located in the Midwest and northeastern United States and in Ontario, Canada. Local FS Member Companies provide farm and non-farm customers with fuels, lubricants, propane, plant nutrients, crop protection, seed, structures, equipment, and grain marketing assistance. FS teams deliver unmatched technical expertise and a genuine interest in partnering in our customers' success. FS Crop Specialists act as trusted advisors in day-to-day farm operations. FS Energy Specialists offer reliable heating, fueling and lubrication solutions to farm and non-farm customers.

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Assist Natural Products and Services

It all starts with the water your animals drink.

For the past decade, Assist has partnered with some of the world’s largest poultry, dairy, beef and swine operators to identify problems with the water animals drink, its impact on animal nutrition and its influence in production environments.

Cleaner, better quality water means more payable production pounds, healthier animals, less feed and so much more. Our specially engineered amino acids, micronutrients and probiotics work in tandem with water to dramatically improve gut health and beneficial microbes that make the digestion process more efficient. Our environmental enzymes work with water to accelerate the growth of beneficial bacteria that outcompete unwanted pathogens and dangerous bacteria that impact animal health. https://assist-nps.com/about/
Some of the Farms

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- Klever Farms
- Mau Farms
- High Plains Pork
- Kent Farms
- Wernacres
- Bier Blume Farms
- Bonnet Farms
- Wishful Acres Farms
- Mahon Farms Pioneer Seeds

Business

Skid Steer Specialties
Down on the Farm Toys
Lena Milling
Community Bank
Citizens State Bank
Lena Vet Clinic
Stamm Farm Systems
What else?

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Does your family farm? Tell us about it on your Home Grown Poster

Where do you live?

What crops do you see in the fields?

Where do you go grocery shopping?

What do you like to eat?

References

https://villageoflena.com/
https://www.accionacom/
https://torkelsoncheese.com/
http://www.ajslenamaidmeats.net/index.html
https://www.adkinsenergy.com/
https://pce-coops.com/
https://www.stephensonfs.com/
http://www.tahlivestock.com/
https://www.facebook.com/HighPlainsPork/
https://assist-nps.com/about/
Stephenson County Agriculture
Homegrown Part #3

1. Where and Lena, Illinois, and Winslow, Illinois located?

________________________________________________________________________________

________________________________________________________________________________

2. Where are wind farms around us and why are they important?

________________________________________________________________________________

________________________________________________________________________________

3. What is solar energy? Where are solar panels at in our community?

________________________________________________________________________________

________________________________________________________________________________

4. What does Torkelson Cheese Co. do for our community? Why is it important?

________________________________________________________________________________

________________________________________________________________________________

5. What is AJ’s Lena Maid Meats? What do they process and sell?

________________________________________________________________________________

________________________________________________________________________________

6. What does Adkins Energy do for our community and the world?

________________________________________________________________________________

________________________________________________________________________________

7. What is Pearl City Elevator? How do they work with Adkins Energy?

________________________________________________________________________________

________________________________________________________________________________
8. What is Stephenson Service Co.? What businesses do they have in Lena?

________________________________________________________________________________

9. What is T.A.H Livestock, INC.? What is the purpose of this business?

________________________________________________________________________________

10. What is High Plains Pork? What is something that interests you about this business?

________________________________________________________________________________

11. What is Assist Natural Products and Services? What do they do for farms?

________________________________________________________________________________

12. Do some research and see what you can find about Agriculture in our communities?

________________________________________________________________________________

________________________________________________________________________________

13. How do Lena and Winslow compare to other communities?

________________________________________________________________________________

14. What is unique to Lena or Winslow in consideration to Agriculture?

________________________________________________________________________________

________________________________________________________________________________

15. Does your family farm?

________________________________________________________________________________

16. Where do you live?

________________________________________________________________________________

17. What crops do you see in the fields?

________________________________________________________________________________

18. Where do you go grocery shopping?

________________________________________________________________________________

19. What do you like to eat?

________________________________________________________________________________
<table>
<thead>
<tr>
<th>Day</th>
<th>Essential Question</th>
<th>Objective</th>
<th>Assessment</th>
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<tbody>
<tr>
<td>Day 11:</td>
<td>What is important about the soil?</td>
<td>Students will be able to identify the different types of soil and will be able to list the areas where specific soils are found.</td>
<td>Soil Identification Lab</td>
</tr>
<tr>
<td>Day 12:</td>
<td>What are the basic structures of a flower?</td>
<td>Students will be able to label a flower structure with 100% accuracy.</td>
<td>Flower Structure Quiz</td>
</tr>
<tr>
<td>Day 13:</td>
<td>What is the difference between sexual vs. asexual reproduction?</td>
<td>Students will be able to list the differences between sexual and asexual reproduction. Students will be able to identify 3 things that reproduce sexual and 3 things that reproduce asexually.</td>
<td>Sexual vs. Asexual List</td>
</tr>
<tr>
<td>Day 14:</td>
<td>What type of soil is best to grow vegetables in?</td>
<td>Students will be able to pick their soil, pick a plant, and will grow a vegetable that they will watch as the quarter and year progresses.</td>
<td>Plant Journal</td>
</tr>
<tr>
<td>Day 15:</td>
<td>What is the difference between a plant cell and an animal cell?</td>
<td>Students will be able to identify the parts of a plant cell and an animal by making a model and labeling correctly.</td>
<td>Plant Cell and Animal Cell Model</td>
</tr>
</tbody>
</table>
Curriculum Standard(s)

| AFNR-BAS-6 | Describe soil formation and management and assess its relevance to plant/animal production and natural resources management |

Learning Objectives (Benchmark) and Assessment:

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to identify the different types of soil and will be able to list the areas where specific soils are found.</td>
<td>1. Soil Identification Lab</td>
</tr>
</tbody>
</table>

Materials Needed:

- Pencil
- Soil Identification PowerPoint
- Soil Identification Notes Sheet
- Soil Identification Lab Worksheet
- Chocolate Pudding
- Vanilla Pudding
- Chocolate Sandwich Cookie
- Chocolate Chip Cookie
- Sprinkles
- Gummy Worms
- Plastic Spoon
- Clear Plastic Cup
- Permanent Marker

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time Large and Small Group Work</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bell Work</td>
<td>4 Mins</td>
</tr>
<tr>
<td>a. What is soil?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td></td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>3. WHAT IS SOIL?</td>
<td>18 Mins</td>
</tr>
<tr>
<td>a. Soil or “dirt” covers the ground and is like the skin of Earth.</td>
<td></td>
</tr>
<tr>
<td>b. Soil covers all parts of Earth’s surface, including the “ground” of oceans, lakes and other bodies of water.</td>
<td></td>
</tr>
<tr>
<td>c. Soil is a mixture of minerals, water, air and organic matter that formed from decomposed remains of plants and animals and waste produced by living things.</td>
<td></td>
</tr>
<tr>
<td>d. Soil also includes living things such as microorganisms, fungi and insects.</td>
<td></td>
</tr>
<tr>
<td>e. Soil is important because:</td>
<td></td>
</tr>
</tbody>
</table>
i. Plants extract water and nutrients from soil and use soil to anchor themselves.

ii. Organisms such as bacteria, fungi and animals live in soil.

iii. Soil helps cycle nutrients and substances, such as carbon and nitrogen, in the environment.

iv. Water precipitates to the ground and flows along Earth’s surface. Water seeps into the ground to form groundwater. Soil filters and cleans the water.

4. PARTS OF SOIL
   a. When studying soil, we often consider the living and nonliving parts of soil.
   b. The living parts of soil include organisms that inhabit soil.
   c. The nonliving parts of soil include the dead and nonliving substances that make up soil. These substances make up the material that we call dirt.
   d. There are 5 major nonliving components of soil:
      i. Sediments: small particles of broken down rock.
      ii. Minerals: important elements needed by living things in the soil, make up rocks, determine the fertility of soil
      iii. Nutrients: substances in soil that are used by living things to survive; the most important nutrients are nitrogen, phosphorus and potassium
      iv. Water: Water is found in between the particles of soil
      v. Organic Matter: made from dead and decaying organisms
   e. Many different living things live in soil or depend on soil:
      i. Plants: establish their roots in soil to extract nutrients, water and other substances to help them grow
      ii. Bacteria: help decompose dead organisms and they help “prepare” nutrients, such as nitrogen, in the soil. Bacteria are plentiful in soil - 1 teaspoon of soil can have up to 1 billion bacteria!
      iii. Animals: some animals, such as snakes and groundhogs burrow in soil, insects (ex. worms) in soil help decompose dead organisms
      iv. Fungi: important decomposers that break down dead organisms

5. SOIL FORMATION
   a. Soil can take a long time to form. In fact, soil can take up to 1,000 years to form!
      There are 4 factors that influence how fast soil forms:
      1. Organisms
      2. Topography
      3. Climate
      4. Parent Material

6. Factor #1: Organisms
   a. Living things known as decomposers help break down dead organisms into organic matter. Organic matter is an important part of soil.
   b. The kind and amount of decomposers in the soil can affect how fast organic matter forms.

7. Factor #2: Topography
   a. Elevation and slope make up the shape of the land. We call the shape of land topography.
   b. Topography affects how fast soil forms. Water travels faster down steeper slopes. This causes faster soil formation along steep slopes.
   c. Elevation and slope are also important to the type of soil that forms.

8. Factor #3: Climate
a. Climatic factors, such as precipitation and temperature, affect how fast soil forms. These factors cause weathering.

b. Weathering is the breaking down of rock. Weathering is important to soil formation.

c. Increased precipitation and warmer temperature causes faster weathering, which leads to faster soil formation.

9. Factor #4: Parent Material

a. Parent material is solid rock and minerals found within Earth.

b. Over time, parent material breaks down to form soil. Some rocks and/or minerals break down faster than others.

c. Softer rock breaks down faster than harder rock.

10. SOIL FORMATION

a. In order for soil to form, there must first be parent material. Parent material is solid rock and minerals.

b. Parent material is often bedrock. Bedrock is hard, solid rock that covers Earth. It can become exposed when overlying soil or rock erodes.

c. Over time, parent material is weathered or broken down into small particles.

d. The most influential weathering factors are wind, water and plants.

e. Eventually parent material is completely broken down into small particles. Water and gases mix with the rock and mineral particles.

f. Plants begin to grow in the material, organisms move into the material and larger organisms roam the surface of the material.

g. Organisms die and decompose into organic matter, which is incorporated into the material. Over time, the material transforms into soil.

11. SOIL TEXTURE

a. There are several characteristics of soil. These characteristics include texture, density, color, consistency and porosity.

b. The most important characteristic of soil is texture.

c. Texture is a measure of what the soil feels like. Texture depends on the size of the particles within the soil.

d. Texture determines other characteristics of soil.

e. There are three soil textures:
   1. Sand
   2. Silt
   3. Clay

12. SAND

a. Sand is made of large or coarse particles with diameters ranging from 0.05 to 2.00 millimeters.

b. Because sand is made of large particles, it feels gritty or rough.

c. It allows water and air to pass through easily. However, because it is porous, it does not hold nutrients or water well.

13. SILT

a. Silt is made of medium-sized particles with a diameter of 0.002 to 0.05 millimeters.

b. Because silt is made of smaller particles, it is not as rough as sand. When dry, it feels like smooth powder. When wet, it feels slippery.

c. Because its particles are smaller, it allows some drainage and air to pass through but holds onto nutrients. It can be easily packed down, which allows less water and air to pass through.

14. CLAY
a. Clay is made of tiny or fine particles with a diameter less than 0.002 millimeters.

b. When dry, clay feels smooth and hard. When wet, it feels sticky.

c. Because its particles are fine, it holds onto water and nutrients very well and does not allow air to pass through easily. When wet, clay gets “heavy” from the water and then becomes very hard when dry.

15. TYPES OF SOIL

a. The three soil textures form mixtures to make up different types of soil. Each type of soil has a different fraction or proportion of sand, silt and/or clay.

b. There are many different types of soil but we often focus on the three types below:
   1. Sandy Soil
   2. Clay Soil
   3. Loamy Soil

16. SANDY SOIL

a. Sandy soil is mostly (but not entirely) made of sand. Because sandy soil is mostly sand, it has properties very similar to sand, the soil texture.
   1. Sandy soil is dry and gritty. The particles are large and there are spaces between the particles – they cannot hold water or nutrients.
   2. Water drains quickly through sandy soil and so it’s usually dry. For this reason, sandy soil is not good for plants. Plants cannot extract enough water and nutrients in order to survive.

b. Sandy soil is common at beaches.

17. CLAY SOIL

a. Clay soil is mostly (but not entirely) made of clay. Because clay soil is mostly clay, its properties are most like clay, the soil texture.
   1. Clay soil is made of tiny particles that tend to settle together. This makes it hard for water and air to pass through. It also means clay soil holds onto nutrients tightly.
   2. Clay soil poor soil for plants. Plants cannot extract water or nutrients from clay soil because the soil holds onto these substances so tightly.

b. Clay soil is found everywhere.

18. LOAMY SOIL

a. Loamy soil is made of almost equal parts sand, clay and silt. For this reason, it has characteristics of all three types of soil textures.

b. Loamy soil is considered to be the ideal soil type. It contains a balance of all three soil textures – plus organic matter.
   1. It holds onto water and nutrients and drains water well. Air moves freely through loamy soil.
   2. Loamy soil is the best for plants because of these characteristics. This soil is just right for plants.

c. Loamy soil makes up fertile lands. These lands are ideal for farming and other agricultural uses.

19. LAYERS OF SOIL

a. Most people think soil is just the “dirt” that covers the very top of the ground. In fact, soil is much more than just this material.

b. Soil is actually made of layers. We call these layers horizons. Each horizon is distinct and has its own characteristics.

c. There are 5 major horizons of soil:
   1. O Horizon (Humus)
2. A Horizon (Topsoil)  
3. B Horizon (Subsoil)  
4. C Horizon (Parent Material)  
5. R Horizon (Bedrock)

20. O HORIZON  
   a. The very top layer of soil is called the O horizon.  
   b. This layer is mostly made of leaf litter and decomposed organic matter. We call the decomposed organic matter humus.  
   c. For this reason, the O horizon is also called humus.

21. A HORIZON  
   a. The second layer is called the A horizon or topsoil.  
   b. When we talk about soil types, we often are referring to the soil in this layer.  
   c. This layer is made of mineral and rock particles mixed with humus.  
   d. This is the primary layer where plants grow and animals live.

22. B HORIZON  
   a. The third layer is called the B horizon or subsoil.  
   b. When water drains through the topsoil, it carries minerals with it. When the water moves through the subsoil, the minerals are left behind. This process is called leaching.  
   d. Sometimes a light-colored region of soil forms at the bottom of the A horizon. This is where minerals are “picked up” and carried to the subsoil. Some texts assign this light-colored region as a separate horizon called Horizon E.

23. C HORIZON  
   a. The fourth layer is called the C Horizon.  
   b. This layer is made of slightly broken up or weathered rock.  
   c. The rock in this layer is considered to be the parent material to soil. There is no organic matter in this layer.

24. R HORIZON  
   a. The bottom layer is called the R horizon or bedrock.  
   b. Bedrock is solid rock. Over time, bedrock will weather or break down, forming the non-organic (inorganic) particles that make up soil.  
   c. Some text do not include bedrock as part of soil but we will consider it because it is important to the formation of soil.

Soil Identification Lab  
25. Purpose: Students will create a model of a soil profile and its characteristics identified.  
   a. Materials  
      i. Chocolate Pudding  
      ii. Vanilla Pudding  
      iii. Chocolate Sandwich Cookie  
      iv. Chocolate Chip Cookie  
      v. Sprinkles  
      vi. Gummy Worms  
      vii. Plastic Spoon  
      viii. Clear Plastic Cup  
      ix. Permanent Marker  
   b. Pre Lab Questions:  
      i. Identify and describe the characteristics of the common soil horizons  
         1. O Horizon - Organic Matter - Dead and decaying plants and animals, A Horizon - Topsoil - Dark soil with organic matter and
plant life, B Horizon - lighter in color - still contains roots, C Horizon - usually contains gravel or coarse material and clay, R Horizon - rock or parent material, sometimes there is an E horizon present between the A and B horizon with sandy material.

ii. Explain how soil horizons can become mixed
   1. Organisms moving through the soil, farmers tilling the soil

iii. Describe the role of organic matter in the soil
   1. Provides plant nutrients, improve soil drainage, improves soil aeration and tilth.

c. Procedure
   1. In the bottom of a clear plastic cup place chocolate sandwich cookie. This sandwich cookie represents: __ROCK or R HORIZON__
   2. Next, crumble a chocolate chip cookie and sprinkle the material over the sandwich cookie. This crumbled cookie represents: __C HORIZON__.
   3. Carefully spread a layer of vanilla pudding over the chocolate chip cookie crumbles. The vanilla pudding represents: __B HORIZON or SUBSOIL__.
   4. Next, spread a layer of chocolate pudding in your cup as you spread the chocolate over the vanilla. The chocolate pudding represents: __A HORIZON or TOPSOIL__.
   5. Add sprinkles to the top of the chocolate pudding. The sprinkle represents: __ORGANIC MATTER or O HORIZON__.
   6. Add a gummy worm to the top of your desert. The gummy worm represents: __ORGANISMS IN THE SOIL__.
   7. RESULTS: Label the horizon on the side of the clear cup with a permanent marker, and document our observations below with labels and coloring. Have your teacher check your labels and your diagram accuracy.
   8. Dig into your soil horizons with your spoon and enjoy. The spoon represents: __A PLOW/TILAGE__.

d. Post Lab Questions:
   i. Identify the horizons of the soil that collectively make up the region of the soil we refer to as “solum” (Label this region on your diagram in step 7.) What happens in this region of the soil profile?
      1. Solum = A Horizon + B Horizon (Sometimes includes E horizon between A&B)
   ii. Explain how the tilth of the soil can be improved?
      1. Roots, organisms, organic matter can improve tilth
   iii. In this lab we use gummy worms to represent organisms of the soil what are common organisms that inhabit the soil, and how do they improve the soil structure?
      1. Worms and insects burrow into the soil, leaving paths and tunnels that allow gas exchange and water drainage.
   iv. Describe the process that change soil. Show with arrows on the diagram in step 7 which horizons these processes affect.
      1. Additions - materials such as organic matter or soil being added at the top of the soil profile, Losses- soil material being lost due to erosion, Translocations - materials moving from one horizon to
another by leaching, Transformations - composition of the soil changing due to chemical changes in the soil horizons.

<table>
<thead>
<tr>
<th>26. Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. If you don’t finish your lab questions, they are homework and you need to turn them in tomorrow.</td>
</tr>
<tr>
<td>b. Tomorrow, we will talk about the structure of a plant. Come prepared to work tomorrow.</td>
</tr>
</tbody>
</table>

| 2 Mins |
Soil Identification

... 

Mrs. Schultz

What is soil?

- Soil or “dirt” covers the ground and is like the skin of Earth.
- Soil covers all parts of Earth’s surface, including the “ground” of oceans, lakes and other bodies of water.
What is soil?

- Soil is a mixture of minerals, water, air and organic matter that formed from decomposed remains of plants and animals and waste produced by living things.
- Soil also includes living things such as microorganisms, fungi and insects.

What is Soil?

- Soil is important because:
  - Plants extract water and nutrients from soil and use soil to anchor themselves.
  - Organisms such as bacteria, fungi and animals live in soil.
  - Soil helps cycle nutrients and substances, such as carbon and nitrogen, in the environment.
  - Water precipitates to the ground and flows along Earth’s surface. Water seeps into the ground to form groundwater. Soil filters and cleans the water.
Parts of the Soil

- There are 5 major nonliving components of soil:
  - Sediments: small particles of broken down rock
  - Minerals: important elements needed by living things in the soil, make up rocks, determine the fertility of soil
  - Nutrients: substances in soil that are used by living things to survive; the most important nutrients are nitrogen, phosphorus and potassium
  - Water: Water is found in between the particles of soil
  - Organic Matter: made from dead and decaying organisms

Parts of Soil

- Many different living things live in soil or depend on soil:
  - Plants: establish their roots in soil to extract nutrients, water and other substances to help them grow
  - Bacteria: help decompose dead organisms and they help “prepare” nutrients, such as nitrogen, in the soil. Bacteria are plentiful in soil - 1 teaspoon of soil can have up to 1 billion bacteria!
  - Animals: some animals, such as snakes and groundhogs burrow in soil, insects (e.g. worms) in soil help decompose dead organisms
  - Fungi: important decomposers that break down dead organisms
Soil Formation

- Soil can take a long time to form. In fact, soil can take up to 1,000 years to form! There are 4 factors that influence how fast soil forms:
  1. Organisms
  2. Topography
  3. Climate
  4. Parent Material

Soil Formation

- Factor #1: Organisms
  - Living things known as decomposers help break down dead organisms into organic matter. Organic matter is an important part of soil.
  - The kind and amount of decomposers in the soil can affect how fast organic matter forms.
Soil Formation

- Factor #2: Topography
  - Elevation and slope make up the shape of the land. We call the shape of land **topography**.
  - Topography affects how fast soil forms. Water travels faster down steeper slopes. This causes faster soil formation along steep slopes.
  - Elevation and slope are also important to the type of soil that forms.

Soil Formation

- Factor #3: Climate
  - Climatic factors, such as precipitation and temperature, affect how fast soil forms. These factors cause **weathering**.
  - Weathering is breaking down of rock. Weathering is important to soil formation.
  - Increased precipitation and warmer temperature causes faster weathering, which leads to faster soil formation.
Soil Formation

- Factor #4: **Parent Material**
  - Parent material is solid rock and minerals found within Earth.
  - Over time, parent material breaks down to form soil. Some rocks and/or minerals break down faster than others.
  - Softer rock breaks down faster than harder rock.

---

Soil Formation

- In order for soil to form, there must first be parent material. **Parent material** is solid rock and minerals.
- Parent material is often bedrock. Bedrock is hard, solid rock that covers Earth. It can become exposed when overlying soil or rock erodes.

![Soil and Parent Material Image](image-url)
Soil Formation

- Over time, parent material is weathered or broken down into small particles.
- The most influential weathering factors are wind, water and plants.

Soil Formation

- Eventually parent material is completely broken down into small particles. Water and gases mix with the rock and mineral particles.
- Plants begin to grow in the material, organisms move into the material and larger organisms roam the surface of the material.
- Organisms die and decompose into organic matter, which is incorporated into the material. Over time, the material transforms into soil.
Soil Texture

- There are several characteristics of soil. These characteristics include texture, density, color, consistency and porosity.
- The most important characteristic of soil is texture.
- **Texture** is a measure of what the soil feels like. Texture depends on the size of the particles within the soil.
- Texture determines other characteristics of soil.

Soil Texture

- There are three soil textures:
  - Sand
  - Silt
  - Clay
Sand

- **Sand** is made of large or coarse particles with diameters ranging from 0.05 to 2.00 millimeters.
- Because sand is made of large particles, it feels gritty or rough.
- It allows water and air to pass through easily. However, because it is porous, it does not hold nutrients or water well.

Silt

- **Silt** is made of medium-sized particles with a diameter of 0.002 to 0.05 millimeters.
- Because silt is made of smaller particles, it is not as rough as sand. When dry, it feels like smooth powder. When wet, it feels slippery.
- Because its particles are smaller, it allows some drainage and air to pass through but holds onto nutrients. It can be easily packed down, which allows less water and air to pass through.
Clay

- **Clay** is made of tiny or fine particles with a diameter less than 0.002 millimeters.
- When dry, clay feels smooth and hard. When wet, it feels sticky.
- Because its particles are fine, it holds onto water and nutrients very well and does not allow air to pass through easily. When wet, clay gets “heavy” from the water and then becomes very hard when dry.

Types of Soil

- The three soil textures form mixtures to make up different types of soil. Each type of soil has a different fraction or proportion of sand, silt and/or clay.
- There are many different types of soil but we often focus on the three types below:
  - Sandy Soil
  - Clay Soil
  - Loamy Soil
Sandy Soil

- Sandy soil is mostly (but not entirely) made of sand. Because sandy soil is mostly sand, it has properties very similar to sand, the soil texture.
  - Sandy soil is dry and gritty. The particles are large and there are spaces between the particles - they cannot hold water or nutrients.
  - Water drains quickly through sandy soil and so it's usually dry. For this reason, sandy soil is not good for plants. Plants cannot extract enough water and nutrients in order to survive.

- Sandy soil is common at beaches.

Clay Soil

- Clay soil is mostly (but not entirely) made of clay. Because clay soil is mostly clay, its properties are most like clay, the soil texture.
  - Clay soil is made of tiny particles that tend to settle together. This makes it hard for water and air to pass through. It also means clay soil holds onto nutrients tightly.
  - Clay soil poor soil for plants. Plants cannot extract water or nutrients from clay soil because the soil holds onto these substances so tightly.

- Clay soil is found everywhere.
Loamy Soil

- Loamy soil is made of almost equal parts sand, clay and silt. For this reason, it has characteristics of all three types of soil textures.
- Loamy soil is considered to be the ideal soil type. It contains a balance of all three soil textures — plus organic matter.
  - It holds onto water and nutrients and drains water well. Air moves freely through loamy soil.
  - Loamy soil is the best for plants because of these characteristics. This soil is just right for plants.

Loamy Soil

- Loamy soil makes up fertile lands. These lands are ideal for farming and other agricultural uses.
Layers of Soil

- Most people think soil is just the “dirt” that covers the very top of the ground. In fact, soil is much more than just this material.
- Soil is actually made of layers. We call these layers **horizons**. Each horizon is distinct and has its own characteristics.

---

Layers of Soil

- There are 5 major horizons of soil:
  - O Horizon (Humus)
  - A Horizon (Topsoil)
  - B Horizon (Subsoil)
  - C Horizon (Parent Material)
  - R Horizon (Bedrock)
Layers of Soil

- O Horizon
  - The very top layer of soil is called the **O horizon**.
  - This layer is mostly made of leaf litter and decomposed organic matter. We call the decomposed organic matter humus.
  - For this reason, the O horizon is also called humus.
A Horizon

- The second layer is called the A horizon or topsoil.
- When we talk about soil types, we often are referring to the soil in this layer.
- This layer is made of mineral and rock particles mixed with humus.
- This is the primary layer where plants grow and animals live.

B Horizon

- The third layer is called the B horizon or subsoil.
- This layer is mostly made of clay and mineral deposits.
- When water drains through the topsoil, it carries minerals with it. When the water moves through the subsoil, the minerals are left behind. This process is called leaching.
**B Horizon**

- Sometimes a light-colored region of soil forms at the bottom of the A horizon. This is where minerals are “picked up” and carried to the subsoil. Some texts assign this light-colored region as a separate horizon called **Horizon E**.

**C Horizon**

- The fourth layer is called the **C Horizon**.
- This layer is made of slightly broken up or weathered rock.
- The rock in this layer is considered to be the parent material to soil. There is no organic matter in this layer.
**R Horizon**

- The bottom layer is called the **R horizon** or bedrock.
- Bedrock is solid rock. Over time, bedrock will weather or break down, forming the non-organic (inorganic) particles that make up soil.
- Some text do not include bedrock as part of soil but we will consider it because it is important to the formation of soil.

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  - www.mycutegraphics.com
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Soil

WHAT IS SOIL?

• ____________ or “dirt” covers the ground and is like the ____________ of Earth.
• Soil covers all parts of Earth’s ____________, including the “__________” of ____________, ____________, and other bodies of water.
• Soil is a ____________ of minerals, water, air and ____________ matter that formed from ____________ remains of plants and animals and ____________ produced by living things.
• Soil also includes ____________ things such as microorganisms, fungi and insects.
• Soil is important because:
  – ____________ extract ____________ and ____________ from soil and use soil to anchor themselves.
  – Organisms such as ____________, ____________ and ____________ live in soil.
  – Soil helps ____________ and ____________ and substances, such as ____________ and ____________, in the environment.
  – ____________ precipitates to the ground and flows along Earth’s surface. Water ____________ into the ground to form _____________. Soil ____________ and ____________ the water.

PARTS OF SOIL

• When studying soil, we often consider the ____________ and ____________ parts of soil.
• The ____________ parts of soil include organisms that inhabit soil.
• The ____________ parts of soil include the ____________ and nonliving substances that make up soil. These substances make up the material that we call ____________.
• What are five major nonliving components of soil?
  1. __________________________________________________________________________
  2. __________________________________________________________________________
  3. __________________________________________________________________________
  4. __________________________________________________________________________
  5. __________________________________________________________________________
• What living things live in or depend on soil?
  – __________________________________________________________________________
  – __________________________________________________________________________
  – __________________________________________________________________________

SOIL FORMATION

• Soil can take a long time to form. In fact, soil can take up to ____________ years to form!
• What 4 factors influence how fast soil forms?
  1. ____________
  2. ____________
  3. ____________
  4. ____________
Factor #1: ______________
• Living things known as ______________ help ______________ down ______________ organisms into ______________ matter. Organic matter is an important part of soil.
• The ______________ and ______________ of ______________ in the soil can affect how fast organic matter forms.

Factor #2: ______________
• ______________ and ______________ make up the ______________ of the land. We call the shape of land ______________.
• Topography affects how fast soil forms. Water travels ______________ down ______________ slopes. This causes ______________ soil formation along steep slopes.
• Elevation and slope are also important to the ______________ of soil that forms.

Factor #3: ______________
• Climatic factors, such as ______________ and ______________, affect how fast soil forms. These factors cause ______________.
• ______________ is breaking down of rock. ______________ is important to soil formation.
• Increased ______________ and ______________ temperature causes ______________ weathering, which leads to ______________ soil formation.

Factor #4: ______________ ______________
• ______________ material is ______________ rock and minerals found within Earth.
• Over time, parent material ______________ ______________ to form soil. Some rocks and/or minerals break down ______________ than others.
• ______________ rock breaks down faster than ______________ rock.

SOIL FORMATION
• In order for soil to form, there must first be ______________ material. ______________ material is ______________ rocks and minerals.
• Parent material is often ______________. ______________ is hard, solid rock that covers Earth. It can become ______________ when ______________ soil or rock erodes.
• Over time, ______________ material is ______________ or broken down into small particles.
• The most influential ______________ factors are ______________, ______________ and ______________.
• Eventually parent material is ______________ broken down into ______________ particles. ______________ and ______________ mix with the rock and mineral particles.
• ______________ begin to grow in the material, ______________ move into the material and ______________ organisms roam the ______________ of the material.
• Organisms ______________ and ______________ into ______________ matter, which is incorporated into the material. Over time, the material ______________ into soil.
SOIL TEXTURE

- There are several characteristics of soil. These characteristics include ____________, ____________, ____________, ____________ and ____________.
- The most important characteristic of soil is ____________.
- ____________ is a measure of what the soil ____________ like. Texture depends on the ____________ of the particles within the soil.
- Texture determines other ____________ of soil.
- What are three soil textures?
  1. ____________
  2. ____________
  3. ____________

SAND

- ____________ is made of ____________ or coarse particles with diameters ranging from ____________ to ____________ millimeters.
- Because sand is made of ____________ particles, it feels ____________ or ____________.
- It allows water and air to pass through ____________. However, because it is ____________, it does not hold ____________ or ____________ well.

SILT

- ____________ is made of ____________-sized particles with a diameter of ____________ to ____________ millimeters.
- Because silt is made of ____________ particles, it is not as ____________ as sand. When dry, it feels like ____________ powder. When wet, it feels ____________.
- Because its particles are smaller, it allows some ____________ and ____________ to pass through but ____________ onto nutrients. It can be ____________ packed down, which allows ____________ water and air to pass through.

CLAY

- ____________ is made of ____________ or fine particles with a diameter less than ____________ millimeters.
- When dry, clay feel ____________ and ____________. When wet, it feels ____________.
- Because its particles are fine, it holds onto ____________ and ____________ very well and does not allow ____________ to pass through easily. When wet, clay gets “__________” from the water and then becomes very ____________ when dry.

TYPES OF SOIL

- The three soil textures form ____________ to make up different ____________ of soil. Each type of soil has a different ____________ or proportion of sand, silt and/or clay.
- There are many different types of soil but we often focus on the three types below:
  1. ____________ Soil
  2. ____________ Soil
  3. ____________ Soil
SANDY SOIL

- Sandy soil is ____________ (but not entirely) made of _____________. Because sandy soil is mostly ____________, it has ____________ very similar to ____________, the soil texture.
  1. Sandy soil is ____________ and _____________. The particles are ____________ and there are spaces between the particles - they ____________ hold water or nutrients.
  2. Water drains ____________ through sandy soil and so it's ____________ dry. For this reason, sandy soil is not good for _____________. _____________ cannot extract enough ____________ and ____________ in order to survive.

- Sandy soil is common at _____________.

CLAY SOIL

- ____________ soil is ____________ (but not entirely) made of _____________. Because clay soil is mostly ____________, its ____________ are most like clay, the soil texture.
  1. Clay soil is made of ____________ particles that tend to ____________ together. This makes it ____________ for water and air to ____________ through. It also means clay soil holds onto ____________ ____________.
  2. Clay soil is ____________ soil for _____________. Plants cannot ____________ water or nutrients from clay soil because the soil holds onto these substances so ____________.

- Clay soil is found _____________.

LOAMY SOIL

- ____________ soil is made of almost ____________ parts sand, clay and silt. For this reason, it has ____________ of all ____________ types of soil textures.
- Loamy soil is considered to be the ____________ soil type. It contains a ____________ of all three soil textures – plus ____________ matter.
  1. It holds onto ____________ and ____________ and ____________ water well. Air moves ____________ through loamy soil.
  2. Loamy soil is the ____________ for plants because of these characteristics. This soil is just ____________ for plants.
- Loamy soil makes up ____________ lands. These lands are ideal for ____________ and other ____________ uses.

LAYERS OF SOIL

- Most people think soil is just the “dirt” that ____________ the very ____________ off the ground. In fact, ____________ is much more than just this material.
- Soil is actually made of _____________. We call these layers _____________. Each horizon is ____________ and has its own characteristics.
- What are the 5 major horizons of soil?
  1. ____________
  2. ____________
  3. ____________
  4. ____________
  5. ____________
Label the layers of soil on the diagram below:

**O HORIZON**
- The very ______________ layer of soil is called the ______________.
- This layer is mostly made of ______________ litter and ______________ organic matter. We call the decomposed organic matter ______________.
- For this reason, the O horizon is also called ______________.

**A HORIZON**
- The second layer is called the ______________ or ______________.
- When we talk about soil ______________, we often are referring to the soil in this layer.
- This layer is made of ______________ and rock particles ______________ with ______________.
- This is the ______________ layer where ______________ grow and ______________ live.

**B HORIZON**
- The third layer is called the ______________ or ______________.
- This layer is mostly made of ______________ and mineral ______________.
- When water drains through the ______________, it carries ______________ with it. When the water moves through the ______________, the minerals are left ______________. This process is called ______________.
- Sometimes a ______________-colored region of soil forms at the bottom of the ______________. This is where minerals are “______________ up” and carried to the ______________. Some texts assign this light-colored region as a ______________ horizon called ______________.

**C HORIZON**
- The fourth layer is called the ______________.
- This layer is made of ______________ broken up or ______________ rock.
- The rock in this layer is considered to be the ______________ ______________ to soil. There is no ______________ matter in this layer.

**R HORIZON**
- The bottom layer is called the ______________ or ______________.
- Bedrock is ______________ rock. Over time, bedrock will ______________ or break down, forming the non-organic (______________) that make up soil.
- Some texts do not include bedrock as part of soil but we will consider it because it is important to the formation of soil.
SOIL IDENTIFICATION - Scrumptious Soil
Purpose: Students will create a model of a soil profile and its characteristics identified.

Materials
- Chocolate Pudding
- Vanilla Pudding
- Chocolate Sandwich Cookie
- Chocolate Chip Cookie
- Sprinkles
- Gummy Worms
- Plastic Spoon
- Clear Plastic Cup
- Permanent Marker

Pre Lab Questions:
1. Identify and describe the characteristics of the common soil horizons.

2. Explain how soil horizons can become mixed

3. Describe the role of organic matter in the soil
**Procedure**

1. In the bottom of a clear plastic cup place chocolate sandwich cookie. This sandwich cookie represents ________________________________.

2. Next, crumble a chocolate chip cookie and sprinkle the material over the sandwich cookie. This crumbled cookie represents ________________________________.

3. Carefully spread a layer of vanilla pudding over chocolate chip cookie crumbles. The vanilla pudding represents ________________________________.

4. Next, spread a layer of chocolate pudding in your cup as you spread the chocolate over vanilla. The chocolate pudding represents: ________________________________.

5. Add sprinkles to the top of the chocolate pudding. The sprinkle represents: ________________________________.

6. Add a gummy worm to the top of your dessert. The gummy worm represents: ________________________________.

7. RESULTS: Label the horizon on the side of the clear cup with a permanent marker, and document our observations below with labels and coloring. Have your teacher check your labels and your diagram accuracy.

8. Dig into your soil horizons with your spoon and enjoy. The spoon represents: ________________________________.
Post Lab Questions:

1. Identify the horizons of the soil that collectively make up the region of the soil we refer to as “solum” (Label this region on your diagram in step 7.) What happens in this region of the soil profile?

2. Explain how the tilth of the soil can be improved?

3. In this lab we use gummy worms to represent organisms of the soil what are common organisms that inhabit the soil, and how do they improve the soil structure?

4. Describe the process that changes the soil. Show with arrows on the diagram in step 7 which horizons these processes affect.
Title: What are the basic structures of a flower?

Grade: 8th Grade
Subject Area: Lab Science - Agriculture Education

Curriculum Standard(s)

<table>
<thead>
<tr>
<th>AFNR-BAS-6</th>
<th>Describe soil formation and management and assess its relevance to plant/animal production and natural resources management</th>
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<tbody>
<tr>
<td>AFNR-BAS-13</td>
<td>Explain and demonstrate basic plant science principles including plant health, growth and reproduction</td>
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</tbody>
</table>

Learning Objectives (Benchmark) and Assessment:

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to label a flower structure with 100% accuracy.</td>
<td>1. Flower Structure Quiz</td>
</tr>
</tbody>
</table>

Materials Needed:

- Pencil
- Parts of the Flower PowerPoint
- Parts of the Flower Notes
- Parts of the Flower Quiz
- Straws
- Pipe Cleaners
- Tissue Paper
- Construction Paper
- Dry Black-Eyed Peas
- Dry Grits
- Clay
- Glue

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time Large and Small Group Work</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bell Work</td>
<td>4 Mins</td>
</tr>
<tr>
<td>a. What are the parts of a flower?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td></td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>3. Parts of the Flower Vocabulary with Notes</td>
<td></td>
</tr>
<tr>
<td>a. Stamen</td>
<td>10 Mins</td>
</tr>
<tr>
<td>i. Make fertilizing organ of a flower, consisting of a pollen-containing anther and a filament.</td>
<td></td>
</tr>
<tr>
<td>b. Pollen</td>
<td></td>
</tr>
<tr>
<td>i. Powdery grains of substance of male macro gametophytes of seed plants, which produce male gametes (sperm cells).</td>
<td></td>
</tr>
</tbody>
</table>
### Build a Flower Model

**a.** Students will be given a diagram and the supplies listed below.

- i. Straws
- ii. Pipe Cleaners
- iii. Tissue Paper
- iv. Construction Paper
- v. Dry Black-Eyed Peas
- vi. Dry Grits
- vii. Clay
- viii. Glue

**b.** Students will label

- i. Pedicel
- ii. Ovary
- iii. Ovules
- iv. Sepals
- v. Petals
- vi. Stigma
- vii. Style
- viii. Stamen
- ix. Filament
- x. Anther

**c.** Students will be able to construct the flower model in a way that makes sense to them. The only stipulation is that the students include the parts listed.

### Label and Match the Flower Parts and Functions

**a.** Students will take a quiz to determine their understanding of the parts of the flower/plant and their functions.

### Conclusion

**a.** If you didn’t get to the quiz, tell the students that they will take a quiz tomorrow at the beginning of class.

**b.** Tomorrow, we will talk about sexual vs. asexual plant reproduction.
Parts of a Flower

Mrs. Schultz

Stamen

Male fertilizing organ of a flower, consisting of a pollen-containing anther and a filament.

https://upload.wikimedia.org/wikipedia/commons/thumb/9/95/Amaryllis_stamens_aka.jpg/1200px-Amaryllis_stamens_aka.jpg
**Pollen**

Powdery grains of substance of male macrogametophytes of seed plants, which produce male gametes (sperm cells).

https://upload.wikimedia.org/wikipedia/commons/thumb/e/ee/Tulip_Slagen_Tip.jpg/1200px-Tulip_Slagen_Tip.jpg

---

**Anther**

Part of the stamen that contains the pollen.

Filament

Stalk supporting the anther.

https://cph.fs.quoracdn.net/main-qimg-fac5f41a70873bae25296a944e1c4fb

Pistil

Female organs of a flower (the stigma, style, and ovary).

https://2quotesflower.files.wordpress.com/2015/02/astamens-and-pistil.jpg
**Stigma**

Sticky tip of a flower pistil, on which pollen is deposited.

[Image](https://img.haikudeck.com/mg/LfFNr9r8N_1411075854803.jpg)

**Style**

Long, slender stalk that connects the stigma and the ovary.
Ovary

Enlarged base portion of the pistil. Contains ovules, which develop into seeds upon fertilization.


Ovule

Structure that develops into a seed when fertilized

https://upload.wikimedia.org/wikipedia/commons/1/12/Ovules_in_flower.png
**Sepal**

Lower, or outermost, part of the flower that folds over the tender, closed bud to protect it from cold and other injuries.

https://oregonstate.edu/dept/nursery-weeds/weedspeciespage/red_maida/sepal_780.jpg

---

**Petal**

Modified leaves which surround the reproductive parts.

Create your own Model

Straws
Pipe Cleaners
Tissue Paper
Construction Paper
Dry Black-Eyed Peas
Dry Grits
Clay
Glue

QUIZ

You will need to label a flower and match the flower parts to their functions.
The Flower Parts

1. Stamen - ________________________________
   _____________________________________________________________________
   _____________________________________________________________________

2. Pollen - ________________________________
   _____________________________________________________________________
   _____________________________________________________________________

3. Anther - ________________________________
   _____________________________________________________________________
   _____________________________________________________________________

4. Filament - ________________________________
   _____________________________________________________________________
   _____________________________________________________________________

5. Pistil - ________________________________
   _____________________________________________________________________
   _____________________________________________________________________

6. Stigma - ________________________________
   _____________________________________________________________________
   _____________________________________________________________________

7. Style - ________________________________
   _____________________________________________________________________
   _____________________________________________________________________

8. Ovary - ________________________________
   _____________________________________________________________________
   _____________________________________________________________________

9. Ovule - ________________________________
   _____________________________________________________________________
   _____________________________________________________________________

10. Sepal - ________________________________
   _____________________________________________________________________
    _____________________________________________________________________

11. Petal - ________________________________
    _____________________________________________________________________
    _____________________________________________________________________
Build a Flower Model
Using the Diagram of the flower provided and the supplies listed below. Construct flower models, but make sure you include the parts listed.

<table>
<thead>
<tr>
<th>Parts</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedicel</td>
<td>Straws</td>
</tr>
<tr>
<td>Ovary</td>
<td>Pipe Cleaners</td>
</tr>
<tr>
<td>Ovules</td>
<td>Tissue Paper</td>
</tr>
<tr>
<td>Sepals</td>
<td>Construction Paper</td>
</tr>
<tr>
<td>Petals</td>
<td>Dry black-eyed peas</td>
</tr>
<tr>
<td>Stigma</td>
<td>Dry grits</td>
</tr>
<tr>
<td>Style</td>
<td>Clay</td>
</tr>
<tr>
<td>Stamen</td>
<td>Glue</td>
</tr>
<tr>
<td>Filament</td>
<td>Other _______________</td>
</tr>
<tr>
<td>Anther</td>
<td>Other _______________</td>
</tr>
</tbody>
</table>

![Diagram of flower parts and names](image)
Parts of the Flower Quiz

A. Label the parts of the flower

1. ___________________________  2. ___________________________
3. ___________________________  4. ___________________________
5. ___________________________  6. ___________________________
7. ___________________________
B. Match the Flower Part to Its Function

_____ 1. Male fertilizing organ of a flower, consisting of a pollen-containing anther and a filament.

_____ 2. Powdery grains of substance male macrogametophytes of seed plants, of seed plants, which produce male gametes (sperm cells).

_____ 3. Part of a stamen that contains the pollen.

_____ 4. Stalk supporting the anther.

_____ 5. Female organs of a flower (the stigma, style, and ovary).

_____ 6. Sticky tip of a flower pistil, on which pollen is deposited.

_____ 7. Long, slender stalk that connects the stigma and ovary.

_____ 8. Enlarged base portion of the pistil. Contains ovules, which develop into seeds upon fertilization.

_____ 9. Structure that develops into a seed when fertilized.

_____ 10. Lower, or outermost, part of the flower that folds over tender, closed bud to protect it from cold and other injuries.

_____ 11. Modified leaves which surround the reproductive parts.

<table>
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<th>B. Sepal</th>
<th>C. Ovule</th>
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<tr>
<td>D. Petal</td>
<td>E. Stamen</td>
<td>F. Pistil</td>
</tr>
<tr>
<td>G. Stigma</td>
<td>H. Anther</td>
<td>I. Ovary</td>
</tr>
<tr>
<td>J. Filament</td>
<td>K. Style</td>
<td></td>
</tr>
</tbody>
</table>
Day 13

Mrs. Katelyn Schultz

Title: What is the difference between sexual vs. asexual reproduction? Time: 44 Minutes

Grade: 8th Grade Subject Area: Lab Science- Agriculture Education

Curriculum Standard(s)

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<tbody>
<tr>
<td>1. Students will be able to list the differences between sexual and asexual reproduction. Students will be able to identify 3 things that reproduce sexual and 3 things that reproduce asexually.</td>
<td>1. Sexual vs. Asexual List</td>
</tr>
</tbody>
</table>

Materials Needed:

- Pencil
- Sexual vs. Asexual PowerPoint
- Sexual and Asexual Notes
- Asexual vs. Sexual Reproduction Exit Ticket
- Chromebook

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time Large and Small Group Work</th>
<th>Time</th>
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<tbody>
<tr>
<td>1. Bell Work</td>
<td>4 Mins</td>
</tr>
<tr>
<td>a. How do plants reproduce?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td></td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. Today, we are going to discuss sexual and asexual reproduction. We will take notes and then you will have to find three things that fall into each category.</td>
<td></td>
</tr>
<tr>
<td>a. Sexual Reproduction</td>
<td></td>
</tr>
<tr>
<td>i. Requires two parents</td>
<td></td>
</tr>
<tr>
<td>ii. Each organism has specialized sex cells</td>
<td></td>
</tr>
<tr>
<td>iii. Occurs when male and female sex cells fuse together</td>
<td></td>
</tr>
<tr>
<td>iv. Offspring have characteristics of both parents; not identical</td>
<td></td>
</tr>
<tr>
<td>v. Examples of Sexual Reproduction</td>
<td></td>
</tr>
<tr>
<td>1. Humans</td>
<td></td>
</tr>
<tr>
<td>2. Penguins</td>
<td></td>
</tr>
<tr>
<td>3. Monkeys</td>
<td></td>
</tr>
<tr>
<td>b. Advantages of Sexual Reproduction</td>
<td></td>
</tr>
</tbody>
</table>
i. More genetically diverse offspring
ii. More adaptability
iii. Greater variation
iv. Better chance of survival when faced with environmental changes
c. Disadvantages of Sexual Reproduction
   i. Requires two individuals
   ii. Requires a large amount of energy to nourish offspring before and after birth
d. Asexual Reproduction
   i. Requires only one parent
   ii. Offspring have characteristics genetically identical to parent
   iii. Most common in single celled organisms, but can occur with more complex organisms such as sea stars or worms
   iv. Examples of Asexual Reproduction
       1. Hydra
       2. Strawberries
       3. Planarian
e. Types of Asexual Reproduction
   i. Binary Fission – a cell dividing into two cells after duplicating its genetic material
   ii. Budding – an organism forming a growth that develops into a genetically identical organism and then breaks off
   iii. Fragmentation – an organism splits into pieces and each piece develops into a genetically identical organism
f. Advantages of Asexual Reproduction
   i. Quick population growth
   ii. Less energy required to reproduce
   iii. All organisms are able to reproduce
g. Disadvantages of Asexual Reproduction
   i. No genetic diversity
   ii. Organisms are not easily able to adapt to environmental changes
h. Sexual vs. Asexual
   i. Sexual
      1. 2 parents
      2. Specialized sex cells
      3. Offspring similar, but not identical to parent
      4. Ex. – frog, whale, zebra, hawk
   ii. Asexual
      1. 1 parent
      2. Offspring are genetically identical to parent
      3. Occurs mostly with unicellular organisms
      4. Ex. – bacteria, amoeba, onion, starfish
   iii. Similarities
      1. Types of reproduction
      2. Produces offspring with characteristics from parents
      3. Have advantages and disadvantages

4. Checkpoint
   a. 5 checkpoint questions
   b. Discuss each question with a partner
   c. Write a complete answer to each question on your notes page
| i. Question 1 | 1. In your opinion, is sexual or asexual reproduction more beneficial? |
| ii. Question 2 | 1. Aphids are able to reproduce sexually and asexually. Why would this be beneficial? |
| iii. Question 3 | 1. Sexual or Asexual Reproduction  
   a. Escherichia coli, a type of bacteria, is able to split and make an exact copy of its cells. |
| iv. Question 4 | 1. Sexual or Asexual Reproduction  
   a. Flamingos display their long necks to attract a potential mate. |
| v. Question 5 | 1. Sexual or Asexual Reproduction  
   a. Sea anemones can go through the process of budding and produce eggs. |
| 5. Research | a. Grab a Chromebook and find 3 plants that reproduce sexually and 3 plants that reproduce asexually.  
   i. These should be different than the plants that we talked about today.  
   ii. This must be turned in before the bell rings. |
| 6. Conclusion | a. Tomorrow, we will look at the plant cell and what makes it unique.  
   b. Please bring in any recyclable material to help you with a small project. |
Sexual Reproduction

- Requires two parents
- Each organism has specialized sex cells
- Occurs when male and female sex cells fuse together
- Offspring have characteristics of both parents; not identical

Examples of Sexual Reproduction

Humans  Penguins  Monkeys

© The Science Duo
Advantages and Disadvantages

Advantages of Sexual Reproduction

- More genetically diverse offspring
- More adaptability
- Greater variation
- Better chance of survival when faced with environmental changes

Disadvantages of Sexual Reproduction

- Requires two individuals
- Requires a large amount of energy to nourish offspring before and after birth

Asexual Reproduction

- Requires only one parent
- Offspring have characteristics genetically identical to parent
- Most common in single celled organisms, but can occur with more complex organisms such as sea stars or worms

Examples of Asexual Reproduction

- Hydra
- Strawberries
- Planarian
Types of Asexual Reproduction

- **Binary Fission** – a cell dividing into two cells after duplicating its genetic material

- **Budding** – an organism forming a growth that develops into a genetically identical organism and then breaks off

- **Fragmentation** – an organism splits into pieces and each piece develops into a genetically identical organism
Advantages and Disadvantages

**Advantages of Asexual Reproduction**

- Quick population growth
- Less energy required to reproduce
- All organisms are able to reproduce

**Disadvantages of Asexual Reproduction**

- No genetic diversity
- Organisms are not easily able to adapt to environmental changes

---

**Sexual vs. Asexual**

**Sexual Reproduction**
- 2 parents
- Specialized sex cells
- Offspring similar, but not identical to parent
- Ex. – frog, whale, zebra, hawk

**Asexual Reproduction**
- 1 parent
- Offspring are genetically identical to parent
- Occurs mostly with unicellular organisms
- Ex. – bacteria, amoeba, onion, starfish
Checkpoint

- 5 checkpoint questions
- Discuss each question with a partner
- Write a complete answer to each question on your notes page

Question 1

In your opinion, is sexual or asexual reproduction more beneficial?
Question 2
Aphids are able to reproduce sexually and asexually. Why would this be beneficial?

Question 3
Sexual or Asexual Reproduction?
Escherichia coli, a type of bacteria, is able to split and make an exact copy of its cells.
Question 4
Sexual or Asexual Reproduction?
Flamingos display their long necks to attract a potential mate.

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Question 5
Sexual or Asexual Reproduction?
Sea anemones can go through the process of budding and produce eggs.

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Sexual and Asexual Reproduction

Sexual Reproduction
•
•
•

Examples of Sexual Reproduction
•
•
•

Advantages and Disadvantages

Advantages of Sexual Reproduction
•
•
•

Disadvantages of Sexual Reproduction
•

Asexual Reproduction
•
•

Examples of Asexual Reproduction
•
•
Types of Asexual Reproduction

- ________________________________________________________________________________
- ________________________________________________________________________________
- ________________________________________________________________________________

Advantages and Disadvantages

Advantages of Asexual Reproduction

- ________________________________________________________________________________
- ________________________________________________________________________________
- ________________________________________________________________________________
- ________________________________________________________________________________

Disadvantages of Asexual Reproduction

- ________________________________________________________________________________
- ________________________________________________________________________________

Sexual vs. Asexual

Question 1: In your opinion, is sexual or asexual reproduction more beneficial?

Question 2: Aphids are able to reproduce sexually and asexually. Why would this be beneficial?

Question 3: Sexual or Asexual Reproduction? - Escherichia coli, a type of bacteria, is able to split and make an exact copy of its cells.

Question 4: Sexual or Asexual Reproduction? - Flamingos display their long necks to attract a potential mate.

Question 5: Sexual or Asexual Reproduction? - Sea anemones can go through the process of budding and produce eggs.
Asexual vs. Sexual Reproduction Exit Ticket

1. What are 3 plants reproduce sexually?
   1. ___________________________
   2. ___________________________
   3. ___________________________

2. What are 3 plants that reproduce asexually?
   1. ___________________________
   2. ___________________________
   3. ___________________________
Day 14
Mrs. Katelyn Schultz
Title: What type of soil is best to grow vegetables in? Time: 44 Minutes
Grade: 8th Grade Subject Area: Lab Science- Agriculture Education

Curriculum Standard(s)

<table>
<thead>
<tr>
<th>Curriculum Standard(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFNR-BAS-6</td>
<td>Describe soil formation and management and assess its relevance to plant/animal production and natural resources management</td>
</tr>
<tr>
<td>AFNR-BAS-13</td>
<td>Explain and demonstrate basic plant science principles including plant health, growth and reproduction</td>
</tr>
</tbody>
</table>

Learning Objectives (Benchmark) and Assessment:

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to pick their soil, pick a plant, and will grow a vegetable that they will watch as the quarter and year progresses.</td>
<td>1. Plant Journal</td>
</tr>
</tbody>
</table>

Materials Needed:

- Pencil
- Notebook
- 3 Types of Soils
  - Miracle-Gro Potting Mix
  - Espoma Organic Potting Mix
  - Sun-Gro Black Gold Potting Mix
- Plastic Plant Pots
- Miracle-Gro Gro-ables seed pods
- Variety of Vegetable Seeds
- Tap Water
- Distilled Water
- Drinking Water
- Chromebooks
- Masking Tape
- Permanent Marker
- Plant Journal Pages

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time, Large and Small Group Work</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bell Work</td>
<td>4 Mins</td>
</tr>
<tr>
<td>a. What is a plant that you can grow?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td></td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. What are we going to do today?</td>
<td></td>
</tr>
</tbody>
</table>
a. Today, we are going to plant seeds and grow a plant. You are going to pick the soil, the seed, and water type.

4. The Seed
a. You will have 10 minutes to research the type of plant you would like to grow. We have Miracle-Gro Gro-ables seed pods and a Variety of Seeds that are in packets.
b. Once you have picked one, you need to complete the Seed Portion of your worksheet.
c. Tell me why you picked the seed that you did and make sure you have research to back it up.

5. The Soil
a. You will have 10 minutes to research the type of soils you would like to use to grow your plant. There are 3 Types of Soils you can choose from, 1) Miracle-Gro Potting Mix, 2) Espoma Organic Potting Mix, 3) Sun-Gro Black Gold Potting Mix
b. Tell me why you picked the soil that you did and make sure you have research to back it up.

6. The Water
a. You will have 10 minutes to research the type of water you would like to use to grow your plants in. There are 3 Types of water, tap water, drinking water, distilled water.
b. Tell me why you picked the water that you did and make sure you have research to back it up.

7. Planting
a. Get your pot and fill it with the type of soil you picked.
b. Get the soil you picked and dig a hole in the soil to plant your seed.
c. Cover your seed with soil
d. Water your seeds with the water you picked and complete day 1 of your Plant Journal.

8. Clean Up
a. Put all the supplies away.
b. Write your name on a piece of masking tape with a permanent marker.
c. Put the masking tape on your pot.
d. Find a safe place for your plant.

9. Conclusion
a. We will be checking the plants daily. You will need to make this part of your morning routine. You will be writing down each day in your journal. There are extra journal pages in the absent bin.
My Optimal Planting and Growing Situation

The Seed:
I picked ____________________________
because ____________________________________________________________

The Soil:
I picked ____________________________
because ____________________________________________________________

The Water:
I picked ____________________________
because ____________________________________________________________
's PLANT JOURNAL
Day ____                            Date ______________

Observations:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

What can’t you see?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Day 15

Mrs. Katelyn Schultz

Title: What is the difference between a plant cell and an animal cell?  
Time: 44 Minutes

Grade: 8th Grade  
Subject Area: Lab Science - Agriculture Education

Curriculum Standard(s)

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFNR-BAS-6</td>
<td>Describe soil formation and management and assess its relevance to plant/animal production and natural resources management</td>
</tr>
<tr>
<td>AFNR-BAS-13</td>
<td>Explain and demonstrate basic plant science principles including plant health, growth and reproduction</td>
</tr>
</tbody>
</table>

Learning Objectives (Benchmark) and Assessment:

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
</tr>
</thead>
</table>
| 1. Students will be able to identify the parts of a plant cell and an animal by making a model and labeling correctly. | 1. Plant Cell Model  
2. Animal Cell Model |

Materials Needed:

- Pencil
- Plant and Animal Cell Reading Passage
- Plant Cell Picture
- Animal Cell Picture
- Parts of the Cell Flip Flap Pictures
- Large Construction Paper
- Highlighter

Lesson Procedures:

**Instructional Strategy: Individual Work Time, Large and Small Group Work**

1. **Bell Work**
   a. What is different about a plant cell and an animal cell?  
      i. Answers will vary

2. **Greet the students and give directions on bell work.**
   a. Tell the class, “Good Morning”  
      i. They should reply with “Good Morning, Mrs. Schultz!”  
      ii. “You have 4 minutes to complete the question of the day.”  
      1. At this time, the teacher will take attendance.

3. **The Plant and Animal Cell Reading**
   a. Students will read a short one-page article about Plant Cells and Animal Cells.  
      i. Students will need to highlight the parts of the cell and understand what their functions are.  
      1. **Cell Membrane**  
         a. Encloses the cell and acts like a screen to allow some materials to pass through but not others.  
      2. **Cytoplasm**  
         a. Gel-like fluid made of mostly water that takes up most of the space inside the cell.  
      3. **Nucleus**  
         a. Is an organelle that is the “brain” of the cell
b. Home to the cell’s chromosomes

4. **Vacuole**
   a. Small fluid-filled structures that temporarily store different substances needed by the cell.

5. **Mitochondria**
   a. The “powerhouses” of the cell because they use oxygen to transform food into energy to help the cell carry out activities.

6. **Endoplasmic Reticulum**
   a. Internal delivery system for transporting materials the cell needs.

7. **Ribosomes**
   a. Tiny organelles that make protein for the cell.

8. **Centrioles**
   a. ONLY IN ANIMAL CELLS
   b. Help with cell division

9. **Golgi Bodies**
   a. Help package materials from the endoplasmic reticulum and distribute them around the cell or outside of it.

10. **Cell Wall**
    a. PLANTS ONLY
    b. Cell wall in a plant cell provides extra support and structure for the cell that plant cells need.

11. **Chloroplast**
    a. PLANTS ONLY
    b. Organelles that help the plant make food for itself

4. **Cell Diagram**
   a. Paste the diagrams on a piece of large construction paper.
   b. Color, cut out and glue down the plant cell.
   c. Color each organelle a different color.
   d. Color the organelles on the flip flaps the same colors you chose to color them in the cell.
   e. Cut out and paste the tops of the flip flaps around the cell and draw an arrow to the matching organelle using the flip flaps as labels.
   f. BE SURE TO LAYOUT THE CELLS AND FLIP FLAPS BEFORE GLUING to be sure you have enough space for everything!
   g. Under each flip-flap, record the function of each organelle.

5. **Clean Up**
   a. Put all the coloring supplies, scissors, and glue away.
   b. Clean up all scraps
   c. Put your name on the back of the cell.

6. **Animal vs. Plant Cell Comparison**
   a. INSTRUCTIONS: Using the graphic organizer, list organelles, facts, and any similarities and differences between plant and animal cells.
   b. The differences go on the outsides and the similarities go on the inside. Use this as a brainstorming tool for your writing prompt.
   c. Next, complete the writing prompt using your reading passage, interactive activity, and brainstorming tool.

7. **Conclusion**
a. If you didn’t finish, this is homework. Tomorrow we will plant a plant of your choice. Remember there are differences between an animal and plant cell. Be sure you know those differences as next week we will look at animals.
Animal and Plant Cells

Animals (including humans) are made up of many different types of specialized cells (nerve cells, skin cells, blood cells, etc.), but all of these cells have a similar structure. Animal cells have a “blob” shape & include lots of tiny organelles that help the cell function. Think of your own body – your body contains organs (heart, liver, lungs) that allow your body to function & allow you to live. Similarly, the cell’s Organelles have different functions to help the cell do the same.

The cell membrane encloses the cell and acts like a screen to allow some materials to pass through it but not others. Think of a screen in a window. It allows fresh air in, but keeps the bugs out! Cell membranes allow nutrients & water in while keeping harmful molecules out! The cytoplasm is the gel-like fluid made of mostly water that takes up most of the space inside the cell. The organelles are located in the cytoplasm. The nucleus is an organelle that is the “brain” of the cell. The nucleus is home to all the cell’s chromosomes. Chromosomes are genetic structures that contain the information used to direct cell activity. Chromosomes are made of DNA.

Animal cells have many small fluid-filled structures that temporarily store different substances needed by the cell. These structures are called vacuoles. The mighty mitochondria are considered the “powerhouses” of the cell because they use oxygen to transform food into energy to help the cell carry out activities. The smooth & rough endoplasmic reticulum serve as an internal delivery system for transporting materials the cell needs. Included in those materials are ribosomes which are tiny organelles that make protein for the cell (think of them as little protein factories!) Centrioles, located only in animal cells, help with cell division.

Plants, trees, fruits, vegetables, and flowers are made of plant cells. Plant cells are very similar to animal cells, but have some major differences. Animal and plant cells both contain cytoplasm, a nucleus, mitochondria, ribosomes, vacuoles, endoplasmic reticulum, and Golgi bodies. Golgi bodies help package materials from the endoplasmic reticulum and distribute them around the cell or outside of it. Think of Golgi bodies like a post office! Both animal and plant cells are surrounded by a cell membrane. Each of the same organelles between plant and animal cells serves the same function, but may have a slightly different structure. For example, animal cells have multiple small vacuoles for nutrient and water storage while the plant cell has one very large vacuole.

There are a few important differences between animal and plant cells. First, the structure of plant cells is more “box-like” than animal cells. If you look at plant cells under a microscope, they look like little bricks stacked up like a wall. Animal cells cluster together and are more circular. One reason for this shape difference is because plant cells have a cell wall. The cell wall in a plant cell provides extra
support and structure for the cell that plant cells need. This cell wall is made mostly of cellulose, which is a fiber that is the main component of wood and paper.

Plant cells also contain chloroplasts. Chloroplasts are organelles that help the plant make food for itself (because plants don't eat like humans and animals do!) Chloroplasts contain a green pigment called chlorophyll. The chlorophyll captures the energy of sunlight and uses it to make glucose, which is a simple sugar that plants use as food.

This process is called photosynthesis. Chloroplasts and the chlorophyll they contain are what give plants their green color. Not all plant cells have chloroplasts (not all plants are green!!). Cells in the roots of plants, for example, are not exposed to sunlight so they do not need chloroplasts.

Name ___________________

Animal Cell Diagram

INSTRUCTIONS: Paste this diagram on a piece of large construction paper. Color, cut out and glue down the animal cell. Color each organelle a different color. Color the organelles on the flip flaps the same colors you chose to color them in the cell. Cut out and paste the tops of the flip flaps around the cell and draw an arrow to the matching organelle using the flip flaps as labels. BE SURE TO LAYOUT THE CELLS AND FLIP FLAPS BEFORE GLUING to be sure you have enough space for everything! Under each flip-flap, record the function of each organelle.
INSTRUCTIONS: Paste this diagram on a piece of large construction paper. Color, cut out and glue down the plant cell. Color each organelle a different color. Color the organelles on the flip flaps the same colors you chose to color them in the cell. Cut out and paste the tops of the flip flaps around the cell and draw an arrow to the matching organelle using the flip flaps as labels. BE SURE TO LAYOUT
THE CELLS AND FLIP FLAPS BEFORE GLUING to be sure you have enough space for everything!
Under each flip-flap, record the function of each organelle.
ANIMAL VS. PLANT CELL

INSTRUCTIONS: Using the graphic organizer, list organelles, facts, and any similarities and differences between plant and animal cells. The differences go on the outsides and the similarities go on the inside. Use this as a brainstorming tool for your writing prompt. Next, complete the writing prompt using your reading passage, interactive activity, and brainstorming tool.
### Week 4: Animal Science

<table>
<thead>
<tr>
<th>Day</th>
<th>Essential Question</th>
<th>Objective</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 16:</td>
<td>What is animal science?</td>
<td>Students will be able to define animal science vocabulary and use the vocabulary in the correct context.</td>
<td>Animal Science Memory Game</td>
</tr>
<tr>
<td>Day 17:</td>
<td>Where does beef come from?</td>
<td>Students will be able to identify common production methods for raising beef animals.</td>
<td>Beef Production Quiz</td>
</tr>
<tr>
<td>Day 18:</td>
<td>Where does your milk come from?</td>
<td>Students will be able to discuss common production practices utilized by the dairy industry.</td>
<td>Milk Production Quiz</td>
</tr>
<tr>
<td>Day 19:</td>
<td>How are pigs raised?</td>
<td>Students will be able to describe accepted management practices for the stages in the life cycle of swine.</td>
<td>Swine Production Quiz</td>
</tr>
<tr>
<td>Day 20:</td>
<td>How will you become an Agricultural Advocate?</td>
<td>Students will be able to dispel common animal agricultural myths.</td>
<td>Myth Buster</td>
</tr>
</tbody>
</table>
Day 16

Mrs. Katelyn Schultz

Title: What is Animal Science?

Time: 44 Minutes

Grade: 8th Grade

Subject Area: Lab Science- Agriculture Education

Curriculum Standard(s)

| AFNR-BAS-9       | Define major components of the animal industry and outline the development of the resulting products, services, and careers |

Learning Objectives (Benchmark) and Assessment:

<table>
<thead>
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<th>Assessment(s)</th>
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<tbody>
<tr>
<td>1. Students will be able to define animal science vocabulary and use the vocabulary in the correct context.</td>
<td>1. Animal Science Memory Vocabulary Game</td>
</tr>
</tbody>
</table>

Materials Needed:

- Pencil
- Animal Science Terms PowerPoint
- Animal Science Notes Page
- Animal Science Memory Game Cards
- Computers

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time, Large and Small Group Work</th>
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</thead>
<tbody>
<tr>
<td>1. Bell Work</td>
<td>4 Mins</td>
</tr>
<tr>
<td>a. What is animal science?</td>
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</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. What are we going to do today?</td>
<td>23 Mins</td>
</tr>
<tr>
<td>a. Today, we are looking at the basic vocabulary of Animal Science.</td>
<td></td>
</tr>
<tr>
<td>Please take out a pen or pencil and get a note sheet.</td>
<td></td>
</tr>
<tr>
<td>4. Animal Science PowerPoint</td>
<td></td>
</tr>
<tr>
<td>a. What is Animal Science?</td>
<td></td>
</tr>
<tr>
<td>i. According to the American Society of Animal Science...Animal Science is concerned with the science and business of producing domestic livestock species, including but not limited to beef cattle, dairy cattle, horses, poultry, sheep, and swine.</td>
<td></td>
</tr>
<tr>
<td>b. Bull</td>
<td></td>
</tr>
<tr>
<td>i. uncastrated male beef/dairy animal</td>
<td></td>
</tr>
<tr>
<td>c. Steer</td>
<td></td>
</tr>
<tr>
<td>i. castrated male beef/dairy animal</td>
<td></td>
</tr>
<tr>
<td>d. Heifer</td>
<td></td>
</tr>
</tbody>
</table>
i. female beef/dairy animal that has not had a calf (usually less than 18 to 24 months of age)

e. Cow
   i. female beef/dairy animal that has had a calf
f. Calf
   i. young beef/dairy animal either male or female
g. Calving
   i. the act of parturition in cattle
h. Boar
   i. uncastrated male swine
i. Barrow
   i. castrated male swine
j. Gilt
   i. female swine that has not had a litter
k. Sow
   i. female swine that has had a litter
l. Pig
   i. young swine
m. Farrowing
   i. the act of parturition in swine
n. Ram
   i. uncastrated male sheep
o. Wether
   i. castrated male sheep
p. Ewe
   i. female sheep
q. Lamb
   i. young sheep
r. Lambing
   i. the act of parturition in sheep
s. Billy
   i. uncastrated male goat
t. Wether
   i. castrated male goat
u. Nanny
   i. female goat
v. Kid
   i. young goat
w. Kidding
   i. the act of parturition in goats
x. Stallion
   i. uncastrated male horses
y. Gelding
   i. castrated male horse
z. Mare
   i. female horse over two years of age
aa. Filly
   i. female horse less than 2 years of age
bb. Foal
   i. young horse
<table>
<thead>
<tr>
<th>cc. Foaling</th>
<th>i. the act of parturition in horses</th>
</tr>
</thead>
<tbody>
<tr>
<td>dd. Rooster</td>
<td>i. uncastrated male chicken</td>
</tr>
<tr>
<td>ee. Capon</td>
<td>i. castrated male chicken</td>
</tr>
<tr>
<td>ff. Hen</td>
<td>i. female chicken</td>
</tr>
<tr>
<td>gg. Broiler</td>
<td>i. young chicken at market weight</td>
</tr>
<tr>
<td>hh. Chick</td>
<td>i. very young chicken not yet at market weight</td>
</tr>
<tr>
<td>ii. Laying</td>
<td>i. act if parturition in chickens</td>
</tr>
</tbody>
</table>

**5. Matching Game**

a. Students will work with a partner to play memory and learn their animal science terms.

b. Find a partner

c. Grab a set of memory cards

d. Play the game of memory until class is over with.

**6. Conclusion**

a. Last week we looked at the plant cell and now we are going to look at the animal cell in closer details. Make sure you bring those readings and
Animal Science

Mrs. Schultz

What is Animal Science?

According to the American Society of Animal Science...

Animal Science is concerned with the science and business of producing domestic livestock species, including but not limited to beef cattle, dairy cattle, horses, poultry, sheep, and swine.

https://extension.umd.edu/cacil-county/4-h-youth/animal-science-information
BOVINE

BEEF and DAIRY CATTLE

Bull

unciastrated male beef/dairy animal

Beef

Dairy
http://genesourceuk.com/
**Steer**

castrated male beef/dairy animal

- **Beef**

- **Dairy**

**Heifer**

female beef/dairy animal that has not had a calf (usually less than 18 to 24 months of age)

- **Beef**

- **Dairy**
**Cow**

female beef/dairy animal that has had a calf

Beef
https://vdar.com/

Dairy
https://www.fwi.co.uk/livestock/youngstock-managemen
t#pros-cons-allowing-dairy-cows-nurse-calves

**Calf**

young beef/dairy animal either male or female

https://www.pinterest.com/pin/15058979978633475/?lp=true

https://www.pinterest.com/pin/15058979978633475/?lp=true
Calving

the act of parturition in cattle


Swine
Boar

unciastrated male swine

https://en.wikipedia.org/wiki/Boar%E2%80%93pig_hybrid

Barrow

castrated male swine

Gilt

female swine that has not had a litter

https://www.pinterest.com/pin/461478293047844219/?p=true

Sow

female swine that has had a litter

https://thenigsite.com/articles/need-some-tips-on-improving-your-litter-numbers
**Pig**

*young swine*


---

**Farrowing**

*the act of parturition in swine*

https://www.freefarrowing.org/
SHEEP

Ram
une castrated male sheep

Wether

castrated male sheep

https://www.sunrisesheepcompany.com/sires.html

Ewe

female sheep

Lamb

young sheep

https://pickrellockersandsmokehouse.com/

Lambing

the act of parturition in sheep

https://www.countryfile.com/go-outdoors/where-to-watch-lambing/
GOAT

Billy

 unconcastrated male goat

https://www.freeimages.co.uk/galleries/nature/animals/slides/goat0191.htm
Wether

castrated male goat

http://www.buckeyeillinoisgenetics.com/SiresDams.html

Nanny

female goat

https://www.facebook.com/Nanny-Goat-Acres-589063821166183/about/
Kid

young goat

https://www.shutterstock.com/search/baby+goat

Kidding

the act of parturition in goats

HORSES

Stallion

uncastrated male horses

Gelding

castrated male horse


Mare

female horse over two years of age

https://www.horsejournals.com/horse-care/breeding/mare-foal/breeding-your-mare
**Filly**

female horse less than 2 years of age

https://en.wikipedia.org/wiki/Filly

**Foal**

young horse

https://www.thesprucepets.com/what-can-i-train-a-foal-1886968
Foaling

the act of parturition in horses

https://thehorse.com/185374/deworming-broodmares-reer-foaling/

POULTRY
Rooster

castrated male chicken


Capon

castrated male chicken

https://www.shutterstock.com/search/capon
**Hen**

female chicken

https://www.clabornfarms.com/product/barred-rocks/

**Broiler**

young chicken at market weight

https://www.moyerschicks.com/catalog/conventional-broiler-day-old-chicks-straight-run/
Chick
very young chicken not yet at market weight

https://www.shutterstock.com/search/wings%2Bchick?section=1&orientation=horizontal&sort=popular&image_type=photo&safe=true&search_source=base_related_searches&saveFiltersLink=true&ref_context=keyword

Laying
act of parturition in chickens

**Animal Science Vocabulary**

**BOVINE**
- Bull -
- Steer -
- Heifer -
- Cow -
- Calf -
- Calving -

**SWINE**
- Boar -
- Barrow -
- Gilt -
- Sow -
- Pig -
- Farrowing -

**SHEEP**
- Ram -
- Wether -
- Ewe -
- Lamb -
- Lambing -
### GOAT

- **Billy** - 
- **Wether** - 
- **Nanny** - 
- **Kid** - 
- **Kidding** - 

### HORSES

- **Stallion** - 
- **Gelding** - 
- **Mare** - 
- **Filly** - 
- **Foal** - 
- **Foaling** - 

### POULTRY

- **Rooster** - 
- **Capon** - 
- **Hen** - 
- **Broiler** - 
- **Chick** - 
- **Laying** - 

Animal Science Vocabulary ANSWER KEY

**BOVINE**

Bull - uncastrated male beef/dairy animal

Steer - castrated male beef/dairy animal

Heifer - female beef/dairy animal that has not had a calf (usually less than 18 to 24 months of age)

Cow - female beef/dairy animal that has had a calf

Calf - young beef/dairy animal either male or female

Calving - the act of parturition in cattle

**SWINE**

Boar - uncastrated male swine

Barrow - castrated male swine

Gilt - female swine that has not had a litter

Sow - female swine that has had a litter

Pig - young swine

Farrowing - the act of parturition in swine

**SHEEP**

Ram - uncastrated male sheep

Wether - castrated male sheep

Ewe - female sheep

Lamb - young sheep

Lambing - the act of parturition in sheep
**GOAT**

Billy - uncastrated male goat

Wether - castrated male goat

Nanny - female goat

Kid - young goat

Kidding - the act of parturition in goats

**HORSE**

Stallion - uncastrated male horses

Gelding - castrated male horse

Mare - female horse over two years of age

Filly - female horse less than 2 years of age

Foal - young horse

Foaling - the act of parturition in horses

**POULTRY**

Rooster - uncastrated male chicken

Capon - castrated male chicken

Hen - female chicken

Broiler - young chicken at market weight

Chick - very young chicken not yet at market weight

Laying - act if parturition in chickens
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<thead>
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<td><strong>young swine</strong></td>
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Curriculum Standard(s)

| AFNR-BAS-9 | Define major components of the animal industry and outline the development of the resulting products, services, and careers |

Learning Objectives (Benchmark) and Assessment:

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to identify common production methods for raising beef animals.</td>
<td>1. Beef Production Quiz</td>
</tr>
</tbody>
</table>

Materials Needed:

- Beef Production Notes
- Beef Production Quiz
- Pencil
- Chromebooks
- Access to Google Slides

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time, Large and Small Group Work</th>
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<tbody>
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<td>1. Bell Work</td>
<td>4 Mins</td>
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<tr>
<td>a. Where do you buy your beef at?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td>10 Mins</td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. What is beef?</td>
<td></td>
</tr>
<tr>
<td>a. According to the Oxford Dictionary. Beef is the flesh of a cow, bull, or ox, used as food.</td>
<td></td>
</tr>
<tr>
<td>b. What beef products do you like or have eaten in the last 24 to 48 hours?</td>
<td></td>
</tr>
<tr>
<td>i. Hamburger</td>
<td></td>
</tr>
<tr>
<td>ii. Steak</td>
<td></td>
</tr>
<tr>
<td>iii. Roast</td>
<td></td>
</tr>
<tr>
<td>iv. Stew</td>
<td></td>
</tr>
<tr>
<td>v. The list can get more specific.</td>
<td></td>
</tr>
<tr>
<td>4. How does the beef get onto our plates?</td>
<td></td>
</tr>
<tr>
<td>a. There are three stages in beef production</td>
<td></td>
</tr>
<tr>
<td>i. cow/calf operation</td>
<td></td>
</tr>
<tr>
<td>ii. Backgrounding</td>
<td></td>
</tr>
<tr>
<td>iii. Feedlots</td>
<td></td>
</tr>
<tr>
<td>5. Group work</td>
<td></td>
</tr>
<tr>
<td>a. You will be broken up into 3 groups. In these 3 groups, you will be given an information card about one of the three stages of beef production. It will be your</td>
<td></td>
</tr>
</tbody>
</table>
job to organize the information and teach it to the class. You will need to add your own information and create a PowerPoint slide for the class.

i. Beef production systems
   1. Cow/Calf Production – An operation that focuses on calf production through weaning.
      a. Cattle graze in herds in large pastures
      b. Calves are kept with their mothers
      c. Most cow/calf operations are family owned
      d. Calves range in age from birth to approximately 6-12 months of age
   2. Backgrounding – Growing program for feeder cattle from time calves are weaned until they go to a feedlot.
      a. Calves of similar age and weight are kept together and graze on pasture
      b. Calves begin to receive grain to supplement their diets
      c. Most backgrounding operations are family owned
      d. Calves come from the cow/calf operations and stay until they are approximately 12-18 months old
   3. Feedlot – Enterprise in which cattle are fed grain and a balanced diet for 90-120 days. Feedlots range in size from less than 100-head capacity to many thousands.
      a. Cattle are kept in groups of approximately 100 head
      b. Cattle are kept in large lots allowing at least 125 square feet per head
      c. They are fed a scientifically formulated ration and have constant access to water. - The health of the livestock is carefully monitored, usually 1-2 times per day
      d. Cattle are fed until they reach approximately 1,250 pounds

6. Presentations
   a. You will present your slideshow to the class.
      i. You must answer the questions that are on the note sheet.
         1. Check your answers with Mrs. Schultz
      ii. You must find three interesting facts about the beef production source you are assigned too.
         1. These should aid in our understanding
         2. These should be positive
   b. Present
      i. You will have 5 minutes to present your slideshow to the class. There will be a quiz before the end of the hour.

7. Quiz
   a. Clear off your desk and take out a pencil.
   b. This quiz will be a check of your understanding.
   c. Turn it into the inbox when you are done.

8. Conclusion
   a. Tomorrow we will look at Dairy Farm and how we get things like milk and butter to our table.
   b. Think about the dairy products you eat, daily.
Resources

https://ffa.app.box.com/s/2s3w6e7ft0ez8oyfc36gfpk20ifpzmen/file/301308946338

BEEF PRODUCTION NOTES

**Cow/Calf Production**
An operation that focuses on ________________________________ production through weaning.

- Cattle graze in herds in large ____________________________________________
- Calves are kept with their ________________________________________________
- Most cow/calf operations are ____________________________________________ owned
- Calves range in age from birth to approximately ____________________________months of age

Additional Information from Presentation:

**Backgrounding**
Growing program for ________________ cattle from time calves are weaned until they go to a feedlot.

- Calves of similar __________________ and weight are kept together and graze on pasture
- Calves begin to receive __________________________________ to supplement their diets
- Most backgrounding operations are _________________________________________ owned
- Calves come from the cow/calf operation and stay until they are approximately _______________ months old.

Additional Information from Presentation:

**Feedlot**
Enterprise in which cattle are fed grain and a balanced diet for ________________ days. Feedlots range in size from less than 100-head capacity to many thousands.

- Cattle are kept in groups of approximate _________________________________ head
- Cattle are kept in large _______________________ allowing at least 125 square feet per head
- They are fed a scientifically formulated _________________ and have constant access to water.
- The health of the livestock is carefully ___________________________, usually 1-2 times per day
- Cattle are fed until they reach approximately _______________________________ pounds

Additional Information from Presentation:
Beef Production Quiz

Directions: In the line provided, write the letter of the corresponding answer.

________ 1. What stage of production are the calves kept with their mothers?
   A. Cow/Calf Production
   B. Backgrounding
   C. Feedlot
   D. Both A & B

________ 2. What stage of production are the cattle kept in large pastures?
   A. Cow/Calf Production
   B. Backgrounding
   C. Feedlot
   D. Both A & B

________ 3. Cattle that are finished at the feedlot weight approximately how many pounds?
   A. 1,000
   B. 1,250
   C. 1,400
   D. 1,500

________ 4. What two stages of production are cattle fed grain as a part of their diet?
   A. Cow/Calf Production
   B. Backgrounding
   C. Feedlot
   D. Both B & C.

________ 5. This is the final stage in the beef cattle production program.
   A. Cow/Calf Production
   B. Backgrounding
   C. Feedlot
   D. Both B & C
Title: Where does Your Milk Come from?  
Grade: 8th Grade  
Subject Area: Lab Science-Agriculture Education

Curriculum Standard(s)

| AFNR-BAS-9 | Define major components of the animal industry and outline the development of the resulting products, services, and careers |

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<td>1. Students will be able to discuss common production practices utilized by the dairy industry.</td>
<td>1. Milk Production Quiz</td>
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Materials Needed:

- Milk Production Notes
- Milk Production Quiz
- Group Work Assignments
- Poster Board
- Coloring Supplies

Lesson Procedures:

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<td></td>
</tr>
<tr>
<td>a. According to the Oxford Dictionary. Milk is an opaque white fluid rich in fat and protein, secreted by female mammals for the nourishment of their young.</td>
<td></td>
</tr>
<tr>
<td>4. What animal produces the milk that we drink?</td>
<td></td>
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<tr>
<td>b. There are seven breeds of dairy cows.</td>
<td></td>
</tr>
<tr>
<td>i. HOLSTEIN</td>
<td></td>
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<tr>
<td>ii. JERSEY</td>
<td></td>
</tr>
<tr>
<td>iii. BROWN SWISS</td>
<td></td>
</tr>
<tr>
<td>iv. GUERNSEY</td>
<td></td>
</tr>
<tr>
<td>v. AYRSHIRE</td>
<td></td>
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<tr>
<td>vi. MILKING SHORTHORN</td>
<td></td>
</tr>
<tr>
<td>vii. RED AND WHITE HOLSTEIN</td>
<td></td>
</tr>
<tr>
<td>5. How is milk produced?</td>
<td></td>
</tr>
<tr>
<td>a. Hutch – An individual housing unit designed for young calves.</td>
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<tr>
<td>i. Young calves are given colostrum, nutrient rich milk immediately after birth.</td>
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</table>
b. Freestall barn – A facility to house dairy cows that provides the animals with a clean, dry, comfortable resting area and easy access to food and water. The cows are not restrained and are free to enter, lie down, rise, and leave the barn whenever they desire.
   i. Cows consume approximately 100 pounds of feed and 50 pounds of water each day.

c. Milking parlor – A specialized area on the dairy farm where the milking process is performed. Cows are brought into the parlor two or three times a day.
   i. On average a cow gives 6.5 gallons of milk each day.
   ii. It takes approximately 500 pounds of circulated blood to produce the milk.

d. Processing plant.
   i. The milk is homogenized, reducing the size of fat globules to make the milk smooth.
   ii. The milk is pasteurized, a heat treatment used to remove pathogens from the milk.

6. Group work
   a. Today you will each become an expert in a different area of milk production.
   b. Each group will receive a piece of information vital to milk production.
   c. Use these guidelines to create a poster that includes the following information:
      i. A picture representing your topic
      ii. Terms and definitions of vocabulary
      iii. Describe the importance of this stage in dairy production
      iv. Prepare a presentation for the class
      v. You will be broken up into groups of 4.
         1. When you receive your group and a chunk of information, send one person to gather a poster board, enough copies of “Dairy Production Facts” for each person in your group, and creative supplies to prepare for your presentation. You will have ten minutes to create your presentation.

7. Presentations
   a. You will present your poster to the class.
      i. Share your new knowledge with the class and
      ii. Celebrate the presentations with clapping after each one.

8. Review
   a. Using our notes, let’s work together to create a formula that represents the inputs and products of milk production. This should be in the form of a mathematical equation. As we think through the different segments of the industry let’s also focus on why these segments are an important component to the industry.
      i. Calf hutch permits proper growth and health until weaning. During this time the calves are fed milk with a bottle or bucket, along with grains and forages to continue proper growth. This is an important segment of the dairy industry because it allows us to use cow’s milk for food products such as milk, yogurt, cheese, butter, and ice cream.
      ii. Producing cattle in freestall barns provides them with access to food and water, and provides a clean, comfortable resting place between milking’s. This type of care keeps animals safe from environmental factors and can help prevent infections and diseases since the area is kept clean and dry. Healthy cows are able to produce more milk for our growing population.
      iii. There are many types of milking parlors, but all parlors in which milk for human consumption comes from are thoroughly inspected for cleanliness.
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
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<tbody>
<tr>
<td>Milking parlors allow dairy producers to milk their cattle in a clean, safe environment where they can be closely monitored.</td>
<td></td>
</tr>
<tr>
<td>iv. Milk is collected from the farm and taken to the processing plant where it is pasteurized and homogenized for our safety. Additionally, all milk collected is tested to be safe for human consumption prior to being made into any food or drink products for humans.</td>
<td></td>
</tr>
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9. Quiz  
   a. Clear off your desk and take out a pencil.  
   b. This quiz will be a check of your understanding.  
   c. Turn it into the inbox when you are done.  

10. Conclusion  
   a. Tomorrow we will look at Dairy Farm and how we get things like milk and butter to our table.  
   b. Think about the dairy products you eat, daily.  

Resources  
https://www.midwestdairy.com/education/farm-life/dairy-cows/  
Group A

Guidelines: As a group, create a poster that includes the following information and describes the importance of this stage in dairy production:

1. A picture representing your topic
2. Terms and definitions of vocabulary
3. Prepare a presentation for the class

Facts:

*Hutch – An individual housing unit designed for young calves.*

Young calves are given colostrum, nutrient rich milk given immediately after birth to help boost their immune systems. Shortly after birth, dairy calves will be separated from their mothers and placed into hutches that permit proper growth and health until weaning. During this time the calves are fed milk with a bottle or bucket, along with grains and forages to continue proper growth.

The mothers’ milk is used to provide dairy products for human consumption, such as milk, cheese, yogurt, butter, and ice cream.

Group B

Guidelines: As a group, create a poster that includes the following information and describes the importance of this stage in dairy production:

1. A picture representing your topic
2. Terms and definitions of vocabulary
3. Prepare a presentation for the class

Facts:

*Freestall barn* – A facility to house dairy cows that provides the animals with a clean, dry, comfortable resting area and easy access to food and water. The cows are not restrained and are free to enter, lie down, rise, and leave the barn whenever they desire.

Cows consume approximately 100 pounds of feed and 50 pounds of water each day. The feed consists of proper grains and forages that provide the proper nutrients and vitamins for growth and milk production.
Group C

Guidelines: As a group, create a poster that includes the following information and describes the importance of this stage in dairy production:

1. A picture representing your topic
2. Terms and definitions of vocabulary
3. Prepare a presentation for the class

Facts:

*Milking parlor* – A specialized area on the dairy farm where the milking process is performed. Cows are brought into the parlor two or three times a day, and typically 8 to 12 cows can be milked at one time.

On average a cow gives 6.5 gallons of milk each day.

It takes approximately 500 pounds of circulated blood to produce the milk

Group D

Guidelines: As a group, create a poster that includes the following information and describes the importance of this stage in dairy production:

1. A picture representing your topic
2. Terms and definitions of vocabulary
3. Prepare a presentation for the class

Facts:

*Processing plant* – Is where the milk goes after being picked up from the farm. At the processing plant, the milk is homogenized, reducing the size of fat globules to make the milk smooth.

The milk is also pasteurized, a heat treatment used to remove pathogens from the milk.
Dairy Production Facts

A. __________________________ - An individual housing unit designed for young calves.
   - Young calves are given ______________________, nutrient rich milk immediately after birth.

B. ___________________________ - A facility to house dairy cows that provides the animals with a clean, dry, comfortable resting area and easy access to food and water. The cows are not restrained and are free to enter, lie down, rise, and leave the barn whenever they desire.
   - Cows consume approximately _____________________ pounds of feed and 50 pounds of water each day

C. ____________________________ - A specialized area on the dairy farm where the milking process is performed. Cows are brought into the parlor two or three times a day.
   - On average a cow gives _____________ gallons of milk each day
   - It takes approximately _______________ pounds of circulated blood to produce the milk

D. ____________________________
   - The milk is homogenized, reducing the size of fat globules to make the milk smooth
   - The milk is ________________, a heat treatment used to remove pathogens from the milk
DAIRY PRODUCTION QUIZ
Directions: Read each statement and write the letter of the correct answer in the blank.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The number of gallons of blood it takes to circulate through the cow’s system to make milk.</td>
<td>A. Colostrum</td>
</tr>
<tr>
<td></td>
<td>The amount of feed a cow consumes in a day.</td>
<td>B. Hutch</td>
</tr>
<tr>
<td></td>
<td>An individual housing unit designed for young calves.</td>
<td>C. 100 pounds</td>
</tr>
<tr>
<td></td>
<td>A heat treatment used to remove pathogens from the milk.</td>
<td>D. 500</td>
</tr>
<tr>
<td></td>
<td>Nutrient rich milk.</td>
<td>E. Pasteurization</td>
</tr>
</tbody>
</table>

6. Why is a hutch a proper housing unit for a young dairy calf?
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
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AFNR-BAS-9 | Define major components of the animal industry and outline the development of the resulting products, services, and careers

**Materials Needed:**
- Pork Production Today Readings
- Comparison of Swine Production Systems Worksheet
- Swine Production Quiz
- Pencil

**Lesson Procedures:**

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time, Large and Small Group Work</th>
<th>Time</th>
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</thead>
</table>
| 1. Bell Work  
   a. Where do you buy your beef at?  
      i. Answers will vary  
   2. Greet the students and give directions on bell work.  
      a. Tell the class, “Good Morning”  
         i. They should reply with “Good Morning, Mrs. Schultz!”  
         ii. “You have 4 minutes to complete the question of the day.”  
      1. At this time, the teacher will take attendance.  
  3. What is a pig?  
     a. According to the Oxford Dictionary. A pig is an omnivorous domesticated hoofed mammal with sparse bristly hair and a flat snout for rooting in the soil, kept for its meat.  
     b. Swine is another name for pig.  
  4. What kind of food products do we get from pigs?  
     a. Bacon  
     b. Ham  
     c. Pulled Pork  
     d. Ribs  
     e. Sausage  
     f. Pork Chops  
  5. Swine Production Systems  
     a. Indoor – Environmentally controlled buildings that house swine at similar stages of development.  
     b. Outdoor – Systems, where swine have access to the outdoors and shelter buildings, are not environmentally controlled.  
  6. Life cycle of Swine | 4 Mins |
| Total | 2 Mins | 2 Mins | 2 Mins | 2 Mins | 2 Mins | 5 Mins |
a. Farrow – Pigs from birth until approximately three weeks old or 10-15 pounds
   i. Sows are placed in individual farrowing pens or stalls
      1. This protects the piglets, usually 9-10 pigs per litter, from getting crushed by the sow.
      2. This also protects the piglets and workers from the sow’s protective nature
   ii. The highest loss of piglets happens from birth until they are 3-4 days old.
       Several protective measures are taken to protect the young pigs.
       1. The navel is disinfected
       2. Needle teeth are clipped so they do not injure other pigs or the sow
       3. They receive a supplement of iron
       4. Their tails are docked to prevent damage from getting stepped on
       5. Young males are castrated so they do not injure other pigs or workers
b. Nursery – Pigs from approximately three weeks (10-15 pounds) until nine weeks old (40-60 pounds)
   i. Pigs are housed on slatted floors that let waste fall through, keeping the pigs clean
   ii. Pigs are fed as many as five different diets changed to meet the needs of the growing pig
c. Grower-Finisher – Pigs from approximately nine weeks old (40-60 pounds) until they are approximately 265-275 pounds
   i. Pigs are focused on growth and development
   ii. Although types of housing varies, they are kept as clean and comfortable as possible to ensure high rates of gain
   iii. Diets are adjusted to meet the needs of the specific needs of the pigs at stage of growth
d. Market – Pigs weighing approximately 265 pounds
   i. Pigs are marketed to a terminal or live market

7. Pork Production Today Reading
   a. Read Pork Production Today as a large class giving time for students to ask questions.
      i. Display pictures on a PowerPoint to help give a visual aid to go along with the reading.
   b. Using the reading “Pork Story” list the advantages and disadvantages of the two major types of swine production systems using the “T” charts.

8. Create a Book
   a. You are going to create a children’s book about how pigs grow through production.
   b. Based on the things you read in the article draw a picture of a pig at each stage of its life.
      i. Farrow – Pigs from birth until approximately three weeks old or 10-15 pounds
      ii. Nursery – Pigs from approximately three weeks (10-15 pounds) until nine weeks old (40-60 pounds)
      iii. Grower-Finisher – Pigs from approximately nine weeks old (40-60 pounds) until they are approximately 265-275 pounds
      iv. Market – Pigs weighing approximately 265 pounds
   c. As we discussed earlier, a pig has milestones in their lives just like we do. They have different diets and mature through their life. Regardless if they are housed in
an indoor or outdoor facility, the main role of the producer is to make the pigs as comfortable as they can so they produce a high quality meat product for the consumers.

9. Presentations
   a. You will read your book to the class and then turn it in when you are done.

10. Quiz
    a. Clear off your desk and take out a pencil.
    b. This quiz will be a check of your understanding.
    c. Turn it into the inbox when you are done.

11. Conclusion
    a. Tomorrow we will look at myths that surround the agriculture industry.
    b. You will determine how you can prove these myths to be false.

Resources

https://ffa.app.box.com/s/2s3w6e7ft0ez8oyfc36gfpk20ifpzmen/file/301308915195
Swine Production Systems

Whether pigs are raised in pastures or in totally enclosed barns, systems approaches dominate pork production. Repeatable methods and specialization characterize the modern pork producer regardless of the type of facilities used.

The choice of facility type is mainly a balancing of capital investment, labor requirement and management expertise. Animal and worker welfare are primary concerns to producers, regardless of the type of facilities chosen. The key to good swine care rests more on the producer’s ability to properly manage housing than it does on the specific type of housing provided.

Controlled-environment buildings require much higher investment but lower labor per unit of output. These facilities make handling hogs easier, provide for more direct observation of animals, allow greater control of the production process, protect both animals and workers from the heat, cold, rain and snow, and usually result in faster growth to market weight and better feed efficiency.

Most controlled-environment facilities are operated in “all-in, all-out” fashion where pigs are moved in groups, and buildings are thoroughly cleaned and disinfected between groups. Controlled-environment facilities take little land and thus leave more available for grain production.

Pasture or outdoor production systems involve more acres of land and more labor per unit of output. They require generally lower capital investment, especially when marginal land can be used, but usually give lower productivity in terms of output per unit of land or labor or feed.

Interest in outdoor or pasture facilities has increased in recent years as “systems” ideas have been imported from Europe and as some niche markets have developed for meat from pasture-raised pigs. Well-run pasture systems can be cost competitive with controlled-environment operations.

Regardless of the type of facilities used, the objective is the same: To provide the proper environment to maximize the welfare and productivity of both animal and worker.

Comparison of Swine Production Systems

Directions: Using the reading “Pork Story” list the advantages and disadvantages of the two major types of swine production systems using the “T” charts below.

Define the following:

<table>
<thead>
<tr>
<th>Indoor Production System</th>
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Define the following:

<table>
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<th>Outdoor Production Systems</th>
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Swine Production

Mrs. Schultz

Swine Production Systems

Outdoor — Systems where swine have access to the outdoors and shelter buildings are not environmentally controlled.

https://www.researchgate.net/figure/One-unit-pen-tent-system-for-outdoor-pig-production-from-piglet-to-slaughter-weight-on_fig1_241038132

Indoor — Environmentally controlled buildings that house swine at similar stages of development.

Farrow

Farrow – Pigs from birth until approximately three weeks old or 10-15 pounds

https://www.hobbyfarms.com/swine-farrowing-barns/

Nursery

Pigs from approximately three weeks (10-15 pounds) until nine weeks old (40-60 pounds)

**Grower-Finisher**

Pigs from approximately nine weeks old (40-60 pounds) until they are approximately 265-275 pounds

[Image of pigs feeding]


**Market**

Pigs weighing approximately 265 pounds

[Image of a pig]

Swine Production Quiz

Directions: Place the number that corresponds to the stage of development onto the timeline provided.

1. Nursery _________
2. Farrow _________
3. Market _________
4. Grower-Finish _________

Timeline of a Pig’s Development

5. Select one of the stages of development and describe what happens to the pig during that time.

___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
Title: How will you become an Agricultural Advocate?

Curriculum Standard(s)

| AFNR-BAS-9 | Define major components of the animal industry and outline the development of the resulting products, services, and careers |

Learning Objectives (Benchmark) and Assessment:

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
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<tr>
<td>1. Students will be able to dispel common animal agricultural myths.</td>
<td>1. Myth Buster</td>
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Materials Needed:

- Animal Agricultural Myth Questionnaire
- Animal Agricultural Myth Scenarios
- Pencil

Lesson Procedures:

Instructional Strategy: Individual Work Time, Large and Small Group Work

1. Bell Work
   a. What is a myth?
      i. Answers will vary

2. Greet the students and give directions on bell work.
   a. Tell the class, “Good Morning”
      i. They should reply with “Good Morning, Mrs. Schultz!”
      ii. “You have 4 minutes to complete the question of the day.”
         1. At this time, the teacher will take attendance.

3. What is a myth?
   a. Myth – A fiction or half-truth, especially one that forms part of an ideology
      i. Who has ever heard a story or comment and thought to yourself, “There’s a little fact and fiction in that but I don’t know what I should believe.”
         1. Stories we watch on the news are good examples of this. The newscasters report on the events that happened but sometimes they exaggerate the details to make the story seem more tragic, exciting, or urgent than it really is.
         2. Therefore, the story is a mixture of both fact and fiction.
            a. What is something in the news right now?
               i. Impeachment Proceedings
               ii. Dean Foods Filing for Bankruptcy
               iii. Etc.

4. Today we will ask ourselves some critical questions when it comes to stories we have heard. After hearing each statement that I read, the task is to decide if each statement is a fact or a myth.
   a. “All Farms are large, corporate Farms.” MYTH
      i. The Truth – 97 percent of all farms are family owned and run. Don’t let the names of some fool you, just because they are incorporated does not
mean they are a corporation. These families live and work on this land that has, in many cases, been in their family for generations.

1. (source: http://findourcommonground.com/food-facts/corporate-farms/)

b. “Small Farms are not important.” MYTH
   i. The Truth – small farms (up to 150 acres) are the backbone of the Ag industry. Small Farms allow for people to get locally produced food and maintain a personal relationship with the Farmer.
      1. (Source: http://kissmytractor.wordpress.com/2013/04/04/top-10-agriculture-myths/)

c. “Farmers directly pocket money they make from crops and livestock.” MYTH
   i. The Truth – many people seem to think that food prices are driven by what the Farmer wants to charge stores so that they make as much money as possible. However, only about 15-16 cents goes to the Farmer – the rest goes to paying things such as transportation, labor, processing etc. Unfortunately, many of the direct and indirect costs that farmers face, such as insurance or feed, are not as easily covered.
      1. (source: http://kissmytractor.wordpress.com/2013/04/04/top-10-agriculture-myths/)

d. “There's no future in Agriculture.” MYTH
   i. The Truth – the best future is in Agriculture. Not only are the numbers of graduates with degrees in an Ag-related field growing, so too are the numbers of young Farmers getting out on the farms.
   ii. Don't forget to thank your Farmer, three times a day, everyday.

e. “Successful modern farms require practical expertise in crop biology, agricultural engineering and business.” FACT
   i. It’s not uncommon to find self-driving tractors on a farm, collecting data about the soil and water. According to Farmers Business Network, the average farmer gathers nearly four million data points each year, which contain detailed information about the soil, mineral content, crop yield, temperature and more. These data are used to shape management practices to achieve the maximum output at harvest.
   ii. And with all of this technology being used, it's crucial to have educated growers who are well versed in the advanced tools and machinery needed to produce the best crops.

f. “Corporate and family-owned farms are often located adjacent to one another.” FACT
   i. Oftentimes, corporate and family-owned, or organic and conventional farms are located next to each other and therefore must communicate their agricultural practices with one another. This is largely due to the fact that an action from one farm can largely impact the other. For example, one farm may use an herbicide or insecticide that can run off into their neighbors farmland via rainwater. Or, if one farm has an abundance of
weeds or some other nuisance and neglects to address it, the other farm may be impacted from the problem as well.

g. “Almost all farms are family-owned and passed on from generation to generation.”

FACT

i. This common myth is one that is furthest from the truth. In fact, 98.7% of all farms in America—big and small—are family owned, according to the United States Department of Agriculture. Many farmers live on the farm they work on, and have passed it down through many generations.

5. At times these statements were made and many people believe them. After time, however, the original ideas were proven wrong in some way. This also happens in animal agriculture. We will discover how easy it is for facts to be mixed with myths...which leads to many misguided perceptions, or the wrong idea about agriculture. Let’s keep our attention to detail locked as we dispel some myths in animal agriculture and challenge our classmates to a game of fact vs. myth.

a. The task is to become an expert on the issue. You will receive a sheet that describes an animal agriculture myth with the real facts. You have to read the sheet and develop four statements about the issue. Two of the statements should be true and two should be false, or a myth.

b. Then, we will talk about these as a class. Be prepared to be challenged and understand what the facts are.

6. Real World Connection

a. Students will search current newspapers or websites in an attempt to find issues that they think might be questionable.

b. Once an issue is found students will put together a plan of action of how they would determine if the issue is credible or a myth.

i. The activity is more about the process of making a sound decision with respect to an issue rather than if the found issue is real or a myth.

c. If time allows, these will be talked about as a class. If they are not done, they are homework and due at the beginning of class.

7. Conclusion

a. Great work the last 5 days. I hope you enjoyed the animal science portion of the quarter. I felt that you all really enjoyed this week.

b. Next week, we will look at

Resources

https://www.impac.org/5-myths-and-facts-about-modern-farming/

https://www.fastline.com/frontpage/2014/03/25/top-ten-myths-about-agriculture-farming/


Animal Agriculture Myths

What is a myth? ____________________________________________________________

Fact vs. Myth
Circle Fact or Myth after each statement.

1. “All Farms are large, corporate Farms.”
   FACT       MYTH

2. “Small Farms are not important.”
   FACT       MYTH

3. “Farmers directly pocket money they make from crops and livestock.”
   FACT       MYTH

4. “There’s no future in Agriculture.”
   FACT       MYTH

5. “Successful modern farms require practical expertise in crop biology, agricultural engineering and business.”
   FACT       MYTH

6. “Corporate and family-owned farms are often located adjacent to one another.”
   FACT       MYTH

7. “Almost all farms are family-owned and passed on from generation to generation.”
   FACT       MYTH
Animal Agriculture Myths

The task is to become an expert on the issue. You will receive a sheet that describes an animal agriculture myth with the real facts. You have to read the sheet and develop four statements about the issue. Two of the statements should be true and two should be false, or a myth. Write these statements below.

1. Myth: Cloning results in severely damaged animals that suffer and continue to have health problems all their lives.

   Fact: The vast majorities of swine and goat clones are born healthy, grow normally, and are no more susceptible to health problems than their non-clone counterparts. During the early days of what is known as assisted reproductive technologies in livestock, veterinarians noticed that some calf and lamb fetuses grew too large during pregnancy and had serious birth defects. This set of abnormalities is referred to as “large offspring syndrome,” or LOS. These same abnormalities have also been seen in calf and lamb clones, and have received a lot of attention because they occur at what appear to be higher rates than observed with other assisted reproductive technologies. The syndrome seems to be related to processes that take place outside the body (during the in vitro phase). As producers understand more about the cloning process, the rate at which LOS is observed in calf and lamb clones has been decreasing. The same kind of decrease in LOS rates was observed as people who used technologies such as in vitro fertilization in cattle learned more about the process. LOS has not been observed in swine or goat clones. Most clones that are normal at birth become as strong and healthy as any other young animals. Calf and lamb clones with abnormalities at birth may continue to have health problems for the first few months of life. But after the age of six months, they are completely indistinguishable in appearance and blood measurements from conventionally bred animals of the same age.

Animal Agriculture Myths

The task is to become an expert on the issue. You will receive a sheet that describes an animal agriculture myth with the real facts. You have to read the sheet and develop four statements about the issue. Two of the statements should be true and two should be false, or a myth. Write these statements below.

2. **Myth: Meat from cloned animals is already in the food supply.**

   Fact: The Food and Drug Administration (FDA) asked clone producers and breeders to voluntarily keep milk and meat from clones out of the food and feed supplies until they finish assessing their safety. To the best of their knowledge, producers have done this. After years of detailed study and analysis, FDA has concluded that meat and milk from clones of cattle, swine, and goats, and the offspring of clones from any species traditionally consumed as food, are as safe to eat as food from conventionally bred animals. The FDA does not expect food from clones to enter the food supply in any great amounts any time soon, as these animals will be used for breeding. The U.S. Department of Agriculture (USDA) believes that it is unlikely that products from these animals would enter the meat supply for several years. Meat and milk products from the progeny of animal clones will not be available for several years. USDA will convene stakeholders to discuss efforts to provide a smooth and orderly market transition, as industry determines the next steps with respect to the existing voluntary moratorium.

**Animal Agriculture Myths**

The task is to become an expert on the issue. You will receive a sheet that describes an animal agriculture myth with the real facts. You have to read the sheet and develop four statements about the issue. Two of the statements should be true and two should be false, or a myth. Write these statements below.

3. **Myth: A vegetarian diet is healthier than a diet that includes meat, milk, and eggs.**

   Fact: Both the federal government and the American Heart Association contend that a diet containing meat, milk, and eggs follow their dietary guidelines. Health benefits can be derived by non-vegetarians who follow a prudent diet that is low in fat, sodium, sugar, and alcohol. Just as there are non-vegetarian diets that are unhealthy, so are there poorly planned vegetarian diets. The key to a healthy diet is moderation. One tip from Amy Barr, a registered dietitian in Boulder, Colorado, is “don't eliminate whole food groups. Don’t, for example, drop dairy from your diet.” “A lot of people, especially women, give up milk because they think it’s fattening,” says Anne Fletcher, a registered dietitian and author of Thin for Life. But milk is one of the best sources of calcium in the diet, “which is important for preventing osteoporosis and possibly for warding off colon cancer.

Animal Agriculture Myths

The task is to become an expert on the issue. You will receive a sheet that describes an animal agriculture myth with the real facts. You have to read the sheet and develop four statements about the issue. Two of the statements should be true and two should be false, or a myth. Write these statements below.

4. Myth: You can get the Novel H1N1 virus (swine flu) from pork or pork products.

Fact: You cannot get the Novel H1N1 virus from eating pork or pork products. A study conducted by the U.S. Department of Agriculture (USDA) scientists provided additional confirmation that meat and tissue from pigs exposed to two strains of the 2009 novel pandemic H1N1 virus did not contain virus. These findings about the safety of pork from pigs previously infected with the 2009 novel pandemic H1N1 virus support recommendations of the World Health Organization that pork harvested from swine that had been infected previously and had recovered from the virus can be safely handled or eaten, following basic hygiene practices for handling of meat.

Animal Agriculture Myths
The task is to become an expert on the issue. You will receive a sheet that describes an animal agriculture myth with the real facts. You have to read the sheet and develop four statements about the issue. Two of the statements should be true and two should be false, or a myth. Write these statements below.

5. Myth: Coming in contact with any live poultry will give you avian influenza (bird flu).

Fact: Avian influenza is an infection caused by avian (bird) influenza (flu) viruses. These influenza viruses occur naturally among birds. Wild birds worldwide carry the viruses in their intestines, but usually, do not get sick from them. However, avian influenza is very contagious among birds and can make some domesticated birds, including chickens, ducks, and turkeys sick. Infected birds shed influenza virus in their saliva, nasal secretions, and feces. Domesticated birds may become infected with avian influenza virus through direct contact with infected waterfowl or other infected poultry, or through contact with surfaces (such as dirt or cages) or materials (such as water or feed) that have been contaminated with the virus. Avian Influenza A (H5N1) virus does not usually infect people, but infections with these viruses have occurred in humans. Most of these cases have resulted from people having direct or close contact with H5N1-infected poultry or H5N1-contaminated surfaces. Most cases have occurred in children and young adults and have resulted from direct or close contact with H5N1-infected poultry or H5N1-contaminated surfaces. In general, H5N1 remains a very rare disease in people. The H5N1 virus does not infect humans easily, and if a person is infected, it is very difficult for the virus to spread to another person.

Animal Agriculture Myths

The task is to become an expert on the issue. You will receive a sheet that describes an animal agriculture myth with the real facts. You have to read the sheet and develop four statements about the issue. Two of the statements should be true and two should be false, or a myth. Write these statements below.

6. **Myth: Bovine spongiform encephalopathy (mad cow disease) infected tissue can be found in the human food supply.**

   Fact: BSE stands for bovine spongiform encephalopathy, and it is widely referred to as “mad cow disease.” It is a chronic degenerative disease that affects the central nervous system of cattle. BSE is named because of the spongy appearance of the brain tissue of infected cattle examined under a microscope. Cattle affected by BSE experience progressive degeneration of the nervous system. Affected animals might display changes in temperament, such as nervousness or aggression, abnormal posture, loss of coordination and difficulty in rising, decreased milk production, or loss of body weight despite continued appetite. Beef found in the human food supply is considered safe from mad cow disease by the United States Department of Agriculture. Tissues that would potentially carry the BSE agent (spinal cord tissue) are completely removed at slaughter and not used in meat cuts or products that are consumed by humans. With respect to milk and dairy products, there is no scientific evidence to suggest that those products carry the agent that causes BSE.

Animal Agriculture Myths

The task is to become an expert on the issue. You will receive a sheet that describes an animal agriculture myth with the real facts. You have to read the sheet and develop four statements about the issue. Two of the statements should be true and two should be false, or a myth. Write these statements below.

7. **Myth:** Farm animals are routinely mutilated by beak trimming, tail docking, branding, dehorning, castration, and other practices to make it easier for the farmer.

   **Fact:** To the inexperienced viewer, some routine farm animal handling practices necessary to the welfare and health of the animal and the insurance of quality food may appear brutal, just as some lifesaving human surgical and medical practices may seem brutal to the casual observer. All of these practices are done in a professional manner to ensure the welfare of the animal. Beak trimming and dehorning are done for the safety of the animals and their handlers. Tail docking is done to reduce manure build-up on the animal which can lead to disease and sickness. Castration is done to reduce levels of testosterone in the male animals which can lead to unwanted flavor in meat and to reduce the aggressiveness and potential harm to other animals.

Animal Agriculture Myths
The task is to become an expert on the issue. You will receive a sheet that describes an animal agriculture myth with the real facts. You have to read the sheet and develop four statements about the issue. Two of the statements should be true and two should be false, or a myth. Write these statements below.

8. Myth: Farmers care less for their animals than they do for the money animals bring them. Agribusiness corporations mislead farmers into using production systems and drugs that mean profits at the cost of animal welfare.

Fact: Farmers and ranchers are neither cruel nor naive. One of the main reasons someone goes into farming or ranching is a desire to work with animals. A farmer would compromise his or her own welfare if animals were mistreated. Agriculture is very competitive in the United States. It’s a career that pays the farmer a slim profit on the animals he cares for. Farmers are always looking for ways to improve their farms to ensure animal welfare and the economics of production. It is in the farmer’s own best interest to see the animals in his charge are treated humanely, guaranteeing him a healthy, high-quality animal, a greater return on his investment, and a wholesome food product. No advertising campaign or salesman can convince a farmer to use a system or product that would harm an animal.

Animal Agriculture Myths

The task is to become an expert on the issue. You will receive a sheet that describes an animal agriculture myth with the real facts. You have to read the sheet and develop four statements about the issue. Two of the statements should be true and two should be false, or a myth. Write these statements below.

9. **Myth:** Farm animals in confinement are prone to disease, forcing farmers to routinely use antibiotics, hormones, and drugs to keep them alive. This jeopardizes animal and human health.

   **Fact:** Animal scientists, veterinarians, and on-farm experience show animals kept in housing are no more likely to get sick than animals kept in the open. In fact, they’re generally healthier because they are protected. However, farm animals do sometimes get sick. To prevent illness and to ensure that an animal remains healthy all of its life, farmers will take preventive measures, including the use of animal health products. These products are generally given to the animal in a scientifically formulated feed best suited to the animal’s needs. This is the simplest way to ensure each animal gets the care it needs. Animal health products include animal drugs and vaccines, in addition to vitamins, minerals, and other nutrients the animal needs in a balanced diet. All animal health products are approved and regulated by the U.S. Food & Drug Administration (FDA) prior to being given to animals.

### Week 5: Environmental Science

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<th>Day</th>
<th>Essential Question</th>
<th>Objective</th>
<th>Assessment</th>
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<tr>
<td>Day 21:</td>
<td>What is Ecology?</td>
<td>Students will be able to define ecology.</td>
<td>Backyard Ecology Assessment</td>
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<td>Day 22:</td>
<td>What is Conservation?</td>
<td>Students will be able to define conservation and describe 3 ways in which they can conserve every day.</td>
<td>Backyard Ecology Assessment</td>
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<td>Day 23:</td>
<td>What are Natural Resources?</td>
<td>Students will be able to distinguish Natural Resources between renewable and nonrenewable resources.</td>
<td>Natural Resources Scavenger Hunt</td>
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<td>Day 24:</td>
<td>How are humans impacting the Earth?</td>
<td>Students will be able to list 5 ways in which humans are impacting Earth. Students will be able to label these impacts as positive or negative.</td>
<td>Human Impact Graphic Organizer</td>
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<td>Day 25:</td>
<td>How can humans help save the Earth and the resources it provides?</td>
<td>Students will be able to design a flyer of an idea that they have for people in the community to do to help save the Earth and its resources.</td>
<td>Earth Saving Flyer</td>
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**Curriculum Standard(s)**

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<tbody>
<tr>
<td>AFNR-BAS-12</td>
<td>Apply principles of environmental science as it relates to agricultural production and sustainability</td>
</tr>
<tr>
<td>AFNR-BAS-10</td>
<td>Demonstrate basic skills in natural resource management</td>
</tr>
</tbody>
</table>

**Learning Objectives (Benchmark) and Assessment:**

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to define ecology.</td>
<td>1. Backyard Ecology Assessment</td>
</tr>
</tbody>
</table>

**Materials Needed:**

- Ecology PowerPoint
- Ecology PowerPoint Notes
- Backyard Ecology Part 1

**Lesson Procedures:**

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time, Large and Small Group Work</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bell Work</td>
<td></td>
</tr>
<tr>
<td>a. What is an ecosystem?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td></td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. What is Ecology?</td>
<td></td>
</tr>
<tr>
<td>a. Ecology is the scientific study of interactions between organisms and the environment.</td>
<td></td>
</tr>
<tr>
<td>i. It is the study of the interactions between different groups of organisms.</td>
<td></td>
</tr>
<tr>
<td>ii. It is the study of the interactions between organisms and the environment.</td>
<td></td>
</tr>
<tr>
<td>iii. It is the study of the interactions that exist between the living and nonliving components of the environment.</td>
<td></td>
</tr>
<tr>
<td>b. These interactions occur on many levels, ranging from the organismal level to a global level.</td>
<td></td>
</tr>
<tr>
<td>c. The field of ecology was begun in 1866 by Ernst Haeckel, a German biologist.</td>
<td></td>
</tr>
<tr>
<td>4. The Role of Climate</td>
<td></td>
</tr>
<tr>
<td>a. What is the difference between weather and climate?</td>
<td></td>
</tr>
<tr>
<td>i. Weather is the day-to-day condition of Earth’s atmosphere at a particular time and place.</td>
<td></td>
</tr>
<tr>
<td>ii. Climate refers to the average, year-after-year conditions of temperature and precipitation in a particular region.</td>
<td></td>
</tr>
<tr>
<td>b. Climate is the result of many different factors:</td>
<td></td>
</tr>
</tbody>
</table>
i. The trapping of heat by the atmosphere
ii. The latitude
iii. The transport of heat by winds and ocean currents
iv. The amount of precipitation that occurs
v. The shape and elevation of the landmass

5. The State of Today’s Environment
   a. The Exploding Human Population
      i. One of the most significant environmental changes to occur on Earth is the exploding human population.
      ii. Between 1930 and 1999, the human population on earth tripled from 2 billion to 6 billion.
      iii. By 2050, it is projected that the world’s population will be between 7.8 billion and 12.5 billion.
      iv. An increasing population places great demands on the environment. A greater population requires more food, more energy, and more space for the disposal of wastes.
   b. The Sixth Mass Extinction
      i. There is evidence in the fossil record of five mass extinctions in Earth’s past history.
      ii. A mass extinction is a brief period of time in which large numbers of species die out and disappear.
      iii. Many scientists are convinced that we are in the midst of the sixth mass extinction. Currently, species are disappearing faster than at any other time since the last mass extinction. The last mass extinction occurred 65 million years ago and included the disappearance of the dinosaurs. Scientists estimate that about 1/5th of the species in the world may disappear in this century.
   c. The Damage to the Ozone Layer
      i. Ozone is a molecule composed of three atoms of oxygen. The ozone in the upper atmosphere protects and shields the organisms on Earth from ultraviolet radiation from the sun.
      ii. An abundance of chlorofluorocarbons (CFC’s) is causing damage to this protective layer of ozone.
      iii. CFCs that are produced by industrial chemicals that react with ozone, causing its destruction.
      iv. Because of the protective nature of ozone, only about 1% of the sun’s ultraviolet radiation gets through the ozone shield to reach the Earth. Even such a small amount of ultraviolet radiation is harmful in the form of sunburns and millions of cases of skin cancer each year.
      v. With the further depletion of the ozone layer, more and more UV radiation will reach Earth’s surface.
   d. Climate Changes
      i. The greenhouse effect is the mechanism that insulates our planet from the deep cold of outer space.
      ii. Gases in our atmosphere, such as carbon dioxide and water vapor, trap a portion of the sun’s energy, preventing it from escaping. This has a warming effect on Earth.
      iii. The greenhouse effect is a natural phenomenon and life on Earth would not be possible without it. The greenhouse effect is a natural occurrence in
which heat is retained in the atmosphere by this blanket of greenhouse gases.

iv. Greenhouse gases allow solar energy to penetrate the atmosphere in the form of sunlight. However, these same greenhouse gases do not allow the heat energy to pass out of the atmosphere. The heat trapped by these gases has a warming effect on Earth.

v. Human activities are changing the composition of the atmosphere. The burning of fossil fuels (coal, oil and natural gas) releases large amounts of carbon dioxide into the atmosphere.

vi. It is estimated that the amount of carbon dioxide in the atmosphere has increased by 25% over the last 100 years. The addition of large amounts of carbon dioxide and other greenhouse gases has led to an increased greenhouse effect, causing a greater than normal warming of the atmosphere.

vii. This increase in temperature may change global weather patterns and lead to rising sea levels as polar ice melts.

6. Levels of Ecological Organization
   a. Scientists recognize a hierarchy of organization in the environment. Each level has unique properties that result from the interactions among its components.
      From broadest to most specific, these levels are:
      i. The biosphere
      ii. Ecosystems
      iii. Communities
      iv. Populations
      v. Organisms

b. The Biosphere
   i. The biosphere is the broadest level of ecological organization and includes all other levels.
   ii. The biosphere contains the combined portions of the planet on which all life exists, including land, water, and air.
   iii. All organisms are found within the biosphere.
   iv. The biosphere extends 5 to 6 miles above the Earth’s surface to the deepest parts of the ocean.
   v. Life is not distributed evenly throughout the biosphere. Most organisms are found within a few meters of the surface of the land or ocean.

c. Ecosystems
   i. The biosphere is composed of smaller units called ecosystems.
   ii. An ecosystem is a collection of all the organisms that live in a particular place, together with their nonliving, or physical environment.
   iii. As an example, consider a pond ecosystem.
      1. What living organisms might live in this ecosystem? Fish, insects, turtles, plants, algae, bacteria, protists, amphibians, and birds.
         a. List some of the nonliving components of this ecosystem.
            i. The level of oxygen and carbon dioxide dissolved in the water.
            ii. The supply of nitrogen and phosphorous.
            iii. The pH of the water.
            iv. The amount of sunlight received by the pond.
   iv. The interaction between the physical environment and the living organisms will affect their survival.
d. Communities
   i. A community is all of the living organisms found in a particular area.
   ii. In the pond ecosystem used as an example above, fish, insects, turtles, plants, algae, bacteria, protists, and amphibians make up a community.
   iii. A community may contain thousands of species.
   iv. A scientist who studies communities studies the interactions between these living organisms.

e. Populations
   i. A population includes all the members of a single species that live in an area.
   ii. Communities are composed of many different populations.

f. Organisms
   i. This is the simplest level of organization in ecology.
   ii. An organismal scientist would concentrate on the adaptations that allow organisms to overcome the challenges of their environment.

7. Backyard Ecology - PART 1
   a. An Ecological Assessment of Your Neck of the Woods
      i. The first step in protecting our fragile environment is education.
      ii. You must learn about the ecology of your immediate area, and take steps to protect, conserve and improve your local environment.
      iii. How aware are you of the environment in which you live?
         1. Answer the following questions to assess your local environment
            a. How would you describe the area in which you live? Use terms such as desert, prairie, or coastal. Even if you live in a city, in which type of environment was the city built?
            b. Describe the climate of your area.
            c. Name 5 plants that seem to be native to your area. For each plant, list one reason why it is important to humans. For example, can these plants be used as a source of food? Are they used in landscaping?
            d. What type of wildlife can be found in your area? Make a list of the different animals that you have seen.
            e. Referring to your list in question 4, are you aware of any laws or ordinances that protect any of these animals? If so, which animals, and why are they protected?
            f. Make a list of any migratory mammals or birds that pass through your area. At what time of the year would you expect to see them?
            g. Choose 3 birds found in your area and determine their niche.
            h. What agricultural products are grown in your area? Is there a problem in obtaining the water necessary for growing these crops?
            i. What pests are found in your area that might interfere with the growing of crops or livestock?

8. Conclusion
   a. Tomorrow we will look at conservation and then continue without Backyard Ecology.
   b. We are given this one world and we have to start taking better care of it.
INTRODUCTION TO ECOLOGY

What is Ecology?

Ecology is the scientific study of: interactions between organisms and the environment.
What is Ecology?

It is the study of the interactions between: different groups of organisms.

What is Ecology?

It is the study of the interactions between: organisms and the environment.
What is Ecology?

It is the study of the interactions that exist between: the living and nonliving components of the environment.

These interactions occur on many levels, ranging from the organismal level to a global level.

The field of ecology was begun in 1866 by Ernst Haeckel, a German biologist.
The Role of Climate

What is the difference between weather and climate?

1. Weather is the day-to-day condition of Earth's atmosphere at a particular time and place.

2. Climate refers to the average, year-after-year conditions of temperature and precipitation in a particular region.

Climate is the result of many different factors:

1. The trapping of heat by the

2. The latitude

3. The transport of heat by winds and ocean currents

4. The amount of precipitation that occurs

5. The shape and elevation of the landmass
The State of Today’s Environment

We must find solutions to these problems:

- Exploding Human Population
- The Sixth Mass Extinction
- Damage to the Ozone Layer
- Climate Changes

Let’s explore these one by one.....

The Exploding Human Population

One of the most significant environmental changes to occur on Earth is:
the exploding human population.

Between 1930 and 1999, the human population on earth tripled from:
2 billion to 6 billion.
By 2050, it is projected that the world’s population will be between 7.8 billion and 12.5 billion.

An increasing population places great demands on the environment. A greater population requires more food, more energy, and more space for the disposal of wastes.

The Sixth Mass Extinction

There is evidence in the fossil record of five mass extinctions in Earth’s past history.

A mass extinction is: a brief period of time in which large numbers of species die out and disappear.

Many scientists are convinced that we are in the midst of the sixth mass extinction.
The Sixth Mass Extinction

Currently, species are disappearing faster than at any other time since the last mass extinction.

The last mass extinction occurred 65 million years ago and included the disappearance of the dinosaurs.

Scientists estimate that about $\frac{1}{5}$ of the species in the world may disappear in this century.

The Damage to the Ozone Layer

Ozone is a molecule composed of: three atoms of oxygen.

The ozone in the upper atmosphere protects and shields the organisms on Earth from ultraviolet radiation from the sun.

An abundance of chlorofluorocarbons (CFC’s) is causing damage to this protective layer of ozone.
The Damage to the Ozone Layer

CFC’s that are produced by industrial chemicals that react with ozone, causing its destruction.

Because of the protective nature of ozone, only about: 1% of the sun’s ultraviolet radiation gets through the ozone shield to reach the Earth. Even such a small amount of ultraviolet radiation is harmful in the form of sunburns and millions of cases of skin cancer each year.

With the further depletion of the ozone layer: more and more UV radiation will reach Earth’s surface.

Climate Changes

The greenhouse effect is the mechanism that insulates our planet from the deep cold of outer space.

Gases in our atmosphere: such as carbon dioxide and water vapor, trap a portion of the sun’s energy, preventing it from escaping. This has a warming effect on Earth.
The greenhouse effect is a natural phenomenon and life on Earth would not be possible without it.

The greenhouse effect is a natural occurrence in which heat is retained in the atmosphere by this blanket of greenhouse gases.

Greenhouse gases allow solar energy to penetrate the atmosphere in the form of sunlight.

However, these same greenhouse gases do not allow the heat energy to pass out of the atmosphere.

The heat trapped by these gases has a warming effect on Earth.
Human activities are changing the composition of the atmosphere. The burning of fossil fuels (coal, oil, natural gas) releases large amounts of carbon dioxide into the atmosphere.

It is estimated that the amount of carbon dioxide in the atmosphere has increased by 25% over the last 100 years. The addition of large amounts of carbon dioxide and other greenhouses gases has led to an increased greenhouse effect, causing greater than normal warming of the atmosphere.

This increase in temperature may change global weather patterns and lead to rising sea levels as polar ice melts.
The Effect of Latitude on Climate

Because Earth is a sphere that is tilted on its axis, solar radiation strikes the surface of Earth at different angles. As a result of differences in latitude and the angle of heating, Earth has three main climate zones:
1. Polar zones
2. Temperate zones
3. Tropical zones

Polar zones are cold areas where the sun’s rays strike Earth at a very low angle. These zones are located around the North and South poles.
The temperate zones are sites between the polar zones and the tropics. This area is more affected by the changing angle of the sun over the course of a year. Therefore, the climate ranges from hot to cold depending on the season.

The tropical zone is near the equator. The tropics receive direct or nearly direct sunlight all year long. This climate is almost always warm.
Heat Transfer in the Biosphere – Winds and Currents

The unequal heating of Earth’s surfaces is the driving force behind... winds and currents. Winds and currents are responsible for transporting heat throughout the biosphere.

Winds occur because:
warm air tends to rise and cool air tends to sink.
This creates air currents, or winds, that move heat through the atmosphere, from regions of sinking air to regions of rising air. The prevailing winds bring warm or cold air to a region, affecting its climate.

Heat Transfer in the Biosphere – Winds and Currents

Similar patterns of heating and cooling occur in Earth’s oceans. Cold water near the poles sinks and then flows parallel to the ocean floor.

It eventually rises again when it reaches warmer regions in a process called upwelling. At the same time, winds are pushing the surface water to new areas.
The temperature of the surface currents affects the weather and climate of nearby landmasses.
Levels of Ecological Organization

Scientists recognize a hierarchy of organization in the environment. Each level has unique properties that result from the interactions among its components. From broadest to most specific, these levels are:

1. The biosphere
2. Ecosystems
3. Communities
4. Populations
5. Organisms

The Biosphere:

The biosphere is the broadest level of ecological organization and includes all other levels. The biosphere contains the combined portions of...
...
... the planet in which all life exists, including land, water, and air.

All organisms are found within the biosphere.

The biosphere extends 5 to 6 miles above the Earth’s surface to the deepest parts of the ocean.

Life is not distributed evenly throughout the biosphere. Most organisms are found within: a few meters of the surface of the land or ocean.
Ecosystems:
The biosphere is composed of smaller units called ecosystems.

An ecosystem is a collection of:
all the organisms that live in a particular place, together with their nonliving, or physical, environment.

As an example, consider a pond ecosystem.

What living organisms might live in this ecosystem?
Fish, insects, turtles, plants, algae, bacteria, protists, amphibians, birds.

List some of the nonliving components of this ecosystem.

a) The level of oxygen and carbon dioxide dissolved in the water.
b) The supply of nitrogen and phosphorous.
c) The pH of the water.
d) The amount of sunlight received by the pond.

The interaction between the physical environment and the living organisms will affect their survival.
Communities:

A community is: all of the living organisms found in a particular area.

A community may contain thousands of species.

A scientist who studies communities studies the interactions between these living organisms.

In the pond ecosystem used as an example above, the fish, insects, turtles, plants, algae, bacteria, protists, and amphibians make up a community.

Populations:

A population includes: all the members of a single species that live in an area.

Communities are composed of many different populations.
Organisms:

This is the simplest level of organization in ecology.

An organismal scientist would concentrate on the adaptations that allow organisms to overcome the challenges of their environment.
Introduction to Ecology

What is Ecology?
A. Ecology is the scientific study of:

1. It is the study of the interactions between __________________________________________.
2. It is the study of the interactions between __________________________________________.
3. It is the study of the interactions that exist between __________________________________________
   ________________________________________________________________________________

B. These interactions occur on many levels, ranging from the ________________ level to a
   __________ level.

C. The field of ecology was begun in _________ by ____________________________, a German biologist.

The Role of Climate
A. What is the difference between weather and climate?
   1.
   
   2.

   B. Climate is the result of many different factors:
      1.
      2.
      3.
      4.
      5.

The State of Today’s Environment
A. The Exploding Human Population
   1. One of the most significant environmental changes to occur on Earth is:

   2. Between 1930 and 1999, the human population on earth tripled from _________________.

   3. By 2050, it is projected that the world’s population will be between _____________________.

   4. An increasing population places great demands on the environment. A greater population
      requires more ____________, more ____________, and more ____________ for the disposal of
      wastes.
B. The Sixth Mass Extinction
1. There is evidence in the fossil record of:

2. A mass extinction is:

3. Many scientists are convinced that we are in the midst of the _______________________.

   Currently, species are disappearing faster than at any other time since the last mass extinction. The last mass extinction occurred ____________________ ago and included the disappearance of the __________. Scientists estimate that about ______ of the species in the world may ____________________________.

C. The Damage to the Ozone Layer
1. Ozone is a molecule composed of _________________________________.

   The ozone in the upper atmosphere:

2. An abundance of _________________________________ is causing damage to this protective layer of ozone.

3. CFC’s that are produced by ____________________ that react with __________, causing its _____________________.

4. Because of the protective nature of ozone, only about:

   Even such a small amount of ultraviolet radiation is harmful in the form of ______________ and millions of cases of ______________ each year.

5. With the further depletion of the ozone layer:

D. Climate Changes
1. The greenhouse effect is the mechanism that ________________ our planet from the _________________________________.

2. Gases in our atmosphere: This has a ______________________ on Earth
3. The greenhouse effect is a natural phenomenon and life on Earth
   ______________________________.
   The greenhouse effect is a natural occurrence in which heat is:

4. Greenhouse gases allow solar energy to:

   However, these same greenhouse gases do not allow:

   The heat trapped by these gases has a warming effect on Earth.

5. Human activities are changing the __________________ of the atmosphere. The __________________ releases large amounts of __________________ into the atmosphere.

6. It is estimated that the amount of carbon dioxide in the atmosphere has increased by _____ over the last _____ years. The addition of large amounts of carbon dioxide and other greenhouse gases has led to an ________________________________, causing greater than normal ________________________________

7. This increase in temperature may change ________________________________ and lead to ________________________________

Levels of Ecological Organization

A. Scientists recognize a hierarchy of organization in the environment. Each level has unique properties that result from the interactions among its components. From broadest to most specific, these levels are:
   1. 
   2. 
   3. 
   4. 
   5. 

B. The Biosphere
   1. The biosphere is the __________ level of ecological organization and includes all other levels.
   2. The biosphere contains the combined portions of:

   3. All organisms are found within the biosphere.
4. The biosphere extends ____________________________ the Earth’s surface to the ____________________________.

5. Life is not distributed evenly throughout the biosphere. Most organisms are found within:

C. Ecosystems
   1. The biosphere is composed of smaller units called _______________________.
   2. An ecosystem is a collection of:

3. As an example, consider a pond ecosystem.
   What living organisms might live in this ecosystem?

   List some of the nonliving components of this ecosystem.
   a)
   b)
   c)
   d)

4. The interaction between the physical environment and the living organisms will affect their survival.

D. Communities
   1. A community is:

   2. In the pond ecosystem used as an example above, the fish, insects, turtles, plants, algae, bacteria, protists, and amphibians make up a community.

   3. A community may contain ____________________________.
   4. A scientist who studies communities studies the interactions between these living organisms.

E. Population
   1. A population includes:

   2. ______________________ are composed of many different ______________________.
F. Organism
1. This is the _____________ level of organization in ecology.
2. An organismal scientist would concentrate on the adaptations that allow organisms to overcome the challenges of their environment.

Name _________________________________

Date ____________

Backyard Ecology:
An Ecological Assessment of Your Neck of the Woods

The first step in protecting our fragile environment is education. You must learn about the ecology of your immediate area, and take steps to protect, conserve and improve your local environment. How aware are you of the environment in which you live? Answer the following questions to assess your local environment.

1. How would you describe the area in which you live? Use terms such as desert, prairie, or coastal. Even if you live in a city, in which type of environment was the city built?
   _____________________________________________________________________________________________________
   _____________________________________________________________________________________________________

2. Describe the climate of your area.
   ______________________________________________________________________________________________________
   ______________________________________________________________________________________________________

3. Name 5 plants that seem to be native to your area. For each plant, list one reason why it is important to humans. For example, can these plants be used as a source of food? Are they used in landscaping?
   a) ______________________________________________________________________________________________________
   b) ______________________________________________________________________________________________________
   c) ______________________________________________________________________________________________________
   d) ______________________________________________________________________________________________________
   e) ______________________________________________________________________________________________________
4. What type of wildlife can be found in your area? Make a list of the different animals that you have seen.

______________________________________________________________________________________________________________
______________________________________________________________________________________________________________

5. Referring to your list in question 4, are you aware of any laws or ordinances that protect any of these animals? If so, which animals, and why are they protected?

______________________________________________________________________________________________________________
______________________________________________________________________________________________________________

6. Make a list of any migratory mammals or birds that pass through your area. At what time of the year would you expect to see them?

______________________________________________________________________________________________________________
______________________________________________________________________________________________________________

7. Choose 3 birds found in your area and determine their niche.
   a) __________________________________________________________________________________________
   b) __________________________________________________________________________________________
   c) __________________________________________________________________________________________

8. What agricultural products are grown in your area? Is there a problem in obtaining the water necessary for growing these crops?

______________________________________________________________________________________________________________
______________________________________________________________________________________________________________

9. What pests are found in your area that might interfere with the growing of crops or livestock?

______________________________________________________________________________________________________________
______________________________________________________________________________________________________________
Day 22
Mrs. Katelyn Schultz
Title: What is Conservation?
Time: 44 Minutes
Grade: 8th Grade
Subject Area: Lab Science- Agriculture Education

Curriculum Standard(s)

<table>
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<tr>
<th>Curriculum Standard(s)</th>
<th>Description</th>
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<td>AFNR-BAS-12</td>
<td>Apply principles of environmental science as it relates to agricultural production and sustainability</td>
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<td>AFNR-BAS-10</td>
<td>Demonstrate basic skills in natural resource management</td>
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Learning Objectives (Benchmark) and Assessment:

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<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to define conservation and describe 3 ways in which they can conserve every day.</td>
<td>1. Backyard Ecology Assessment Part 2</td>
</tr>
</tbody>
</table>

Materials Needed:

- Conservation PowerPoint
- Conservation PowerPoint Doodle Notes
- Backyard Ecology Part 2

Lesson Procedures:

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<tr>
<th>Instructional Strategy: Individual Work Time, Large and Small Group Work</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bell Work</td>
<td>4 Mins</td>
</tr>
<tr>
<td>a. What does it mean to conserve?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td>18 Mins</td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. Introduction to Conservation PowerPoint</td>
<td></td>
</tr>
<tr>
<td>a. Conservation</td>
<td></td>
</tr>
<tr>
<td>i. The wise use of protection of natural resources</td>
<td></td>
</tr>
<tr>
<td>b. Resources:</td>
<td></td>
</tr>
<tr>
<td>i. Natural</td>
<td></td>
</tr>
<tr>
<td>1. Materials in the environment that are useful to people.</td>
<td></td>
</tr>
<tr>
<td>ii. Renewable</td>
<td></td>
</tr>
<tr>
<td>1. Materials in the Earth that can be replaced by nature in a short period of time.</td>
<td></td>
</tr>
<tr>
<td>iii. Nonrenewable</td>
<td></td>
</tr>
<tr>
<td>1. Materials in the Earth that cannot be replaced within a reasonable amount of time.</td>
<td></td>
</tr>
<tr>
<td>iv. Pollution</td>
<td></td>
</tr>
<tr>
<td>1. Materials introduced into an environment that causes damage, discomfort, or instability.</td>
<td></td>
</tr>
<tr>
<td>v. Environmentally Friendly</td>
<td></td>
</tr>
</tbody>
</table>
1. Does not damage the physical, chemical or biological factors of a community.

vi. Green
   1. Friendly to the environment

vii. Landfill
   1. A location for the disposal of waste.

viii. Disposal
   1. Getting rid of or throwing away

ix. Waste
   1. Without any use or benefit

x. Recycle
   1. To change waste into a new and usable product.

xi. Reuse
   1. Using a product more than once

xii. Reduce
    1. Lowering the amount of waste produced

xiii. Review
     1. What is Conservation?
        a. Conservation is the wise use and protection of natural resources.
           i. How can you conserve Earth’s natural resources?
              1. Turning Off Lights
              2. Walk instead of Drive
              3. Answers will vary

           ii. How can we save gasoline?
               1. Walk
               2. Take a bus
               3. Carpool
               4. Ride a bike

           iii. How do you recycle?
               1. Place items in proper container instead of trash can

4. Backyard Ecology - PART 2
   a. An Ecological Assessment of Your Neck of the Woods
      i. The first step in protecting our fragile environment is education.
      ii. You must learn about the ecology of your immediate area, and take steps to protect, conserve and improve your local environment.
      iii. How aware are you of the environment in which you live?
          1. Answer the following questions to assess your local environment
             a. How do you dispose of garbage? Where does the garbage go when it is collected?
             b. Do you recycle in your home? If so, list the types of items that you recycle.
             c. How can you and your family improve in your efforts to recycle?
             d. List three organizations or agencies in your area that are involved in the conservation and protection of the environment. Describe the purpose of each agency/organization.
e. What volunteer work have you done in your area to support the protection or conservation of the environment?
f. Are there any places in your area where you can go to fish? Would YOU eat the fish caught there?
g. When you consider the area in which you live, are there any obvious sources of pollution? If so, describe the source and the type of pollution.
h. How would you describe the air quality where you live?
i. How would you describe the water quality where you live?
j. Do you live in an area where logging or mining occurs? Are efforts made to restore the environment?
k. Other than recycling, what is done in your home that could be considered “conservation”?
l. What can you do at school to help conserve the resources of the environment?
m. Is there a recycling program at your school? What items at school could be recycled?
n. If your school does not participate in recycling, write a short paragraph in the space below to convince your principal to start a recycling program.

5. Conclusion
   a. Tomorrow we will at the resources we use a little closer.
      i. They are
         1. Natural
         2. Renewable
         3. Non Renewable
   b. Go out and make this world a better place for you and I.

Resources
Amy Brown Science
Introduction to Conservation

Mrs. Schultz

Conservation

The wise use of protection of natural resources

https://environmentcalifornia.org/feature/cae/conservation
Resources

Natural: Materials in the environment that are useful to people.

Resources

Renewable: Materials in the Earth that can be replaced by nature in a short period of time.
Resources
Nonrenewable: Materials in the Earth that cannot be replaced within a reasonable amount of time.

Pollution
Materials introduced into an environment that cause damage, discomfort, or instability.
Environmentally Friendly
Does not damage the physical, chemical or biological factors of a community.

Green
Friendly to the environment


Landfill
A location for the disposal of waste.

http://theconversation.com/why-we're-hunting-for-treasure-in-old-landfill-sites-102304

Disposal
Getting rid of or throwing away

https://www.norcaicompactors.net/6-waste-disposal-methods/
Waste
Without any use or benefit

Recycle
To change waste into a new and usable product.

https://www.reimag.co.za/blog/2019/09/20/the-role-of-effective-waste-management-in-preserving-sites-heritage%E2%80%AF/

https://www.amazon.com/Sassy-Stickers-Recycle-Symbol-Stickers/dp/B00CAyG7E6
Reuse
Using a product more than once

https://www.solarschools.net/knowledge-bank/sustainability/reduce-reuse-recycle

Reduce
Lowering the amount of waste produced

https://www.leedsbeckett.ac.uk/blogs/food-court/2018/01/reduce-coffee-cup-waste/
Review

What is Conservation?

Conservation is...
Conservation is the wise use and protection of natural resources.
Review

How can you conserve Earth’s natural resources?

I can conserve Earth’s resources by...

Turning Off Lights

Walk instead of Drive

What else?
Review
How can we save gasoline?

Review
How do you recycle?
I can recycle by...

Placing items in proper container instead of the trash can!

I can save gasoline by...

Walk
Take a bus
Carpool
Ride a bike
Backyard Ecology:
An Ecological Assessment of Your Neck of the Woods

The first step in protecting our fragile environment is education. You must learn about the ecology of your immediate area, and take steps to protect, conserve and improve your local environment. How aware are you of the environment in which you live? Answer the following questions to assess your local environment.

1. How do you dispose of garbage? Where does the garbage go when it is collected?

________________________________________________________________________________________

2. Do you recycle in your home? If so, list the types of items that you recycle.

________________________________________________________________________________________

3. How can you and your family improve in your efforts to recycle?

________________________________________________________________________________________

4. List three organizations or agencies in your area that are involved in the conservation and protection of the environment. Describe the purpose of each agency/organization.
   a) _____________________________________________________________________________________
   b) _____________________________________________________________________________________
   c) _____________________________________________________________________________________

5. What volunteer work have you done in your area to support the protection or conservation of the environment?

________________________________________________________________________________________

________________________________________________________________________________________
6. Are there any places in your area where you can go to fish? Would YOU eat the fish caught there?
________________________________________________________________________________________________________________

7. When you consider the area in which you live, are there any obvious sources of pollution? If so, describe the source and the type of pollution.
________________________________________________________________________________________________________________

8. How would you describe the air quality where you live?
________________________________________________________________________________________________________________

9. How would you describe the water quality where you live?
________________________________________________________________________________________________________________

10. Do you live in an area where logging or mining occurs? Are efforts made to restore the environment?
________________________________________________________________________________________________________________

11. Other than recycling, what is done in your home that could be considered “conservation”?
________________________________________________________________________________________________________________

12. What can you do at school to help conserve the resources of the environment?
________________________________________________________________________________________________________________

13. Is there a recycling program at your school? What items at school could be recycled?
________________________________________________________________________________________________________________

14. If your school does not participate in recycling, write a short paragraph in the space below to convince your principal to start a recycling program.
________________________________________________________________________________________________________________
Title: What Are Natural Resources?

Curriculum Standard(s)

| AFNR-BAS-12 | Apply principles of environmental science as it relates to agricultural production and sustainability |
| AFNR-BAS-10 | Demonstrate basic skills in natural resource management |

Learning Objectives (Benchmark) and Assessment:

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to distinguish Natural Resources between renewable and nonrenewable resources.</td>
<td>1. Natural Resources Scavenger Hunt</td>
</tr>
</tbody>
</table>

Materials Needed:

- Natural Resources Scavenger Hunt
- Chromebook
- Pencil

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time, Large and Small Group Work</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bell Work</td>
<td>4 Mins</td>
</tr>
<tr>
<td>a. What is the difference between renewable and nonrenewable resources?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td>5 Mins</td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. Over the past 2 days, we have been looking at Ecology, Conservation, and Natural Resources.</td>
<td>33 Mins</td>
</tr>
<tr>
<td>a. What are Natural Resources?</td>
<td></td>
</tr>
<tr>
<td>i. Materials in the environment that are useful to people?</td>
<td></td>
</tr>
<tr>
<td>b. What are Renewable Resources?</td>
<td></td>
</tr>
<tr>
<td>i. Materials in the Earth that can be replaced by nature in a short period of time.</td>
<td></td>
</tr>
<tr>
<td>c. What are Non-Renewable Resources?</td>
<td></td>
</tr>
<tr>
<td>i. Materials in the Earth that cannot be replaced within a reasonable amount of time.</td>
<td></td>
</tr>
<tr>
<td>4. Scavenger Hunt</td>
<td></td>
</tr>
<tr>
<td>i. You are to go on a scavenger hunt and find the following information.</td>
<td></td>
</tr>
<tr>
<td>1. What are Natural Resources?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>2.</td>
<td>Identify all the natural resources and what we receive from them.</td>
</tr>
<tr>
<td>3.</td>
<td>What are the two types of Natural Resources? What other examples of these resources are there?</td>
</tr>
<tr>
<td>4.</td>
<td>What is the difference between the two types of Natural Resources?</td>
</tr>
<tr>
<td>5.</td>
<td>In a year, how much does the world consume in natural materials?</td>
</tr>
<tr>
<td>6.</td>
<td>In what three forms do people consume Natural Resources? Provide examples</td>
</tr>
<tr>
<td>7.</td>
<td>Are Natural Resources distributed evenly? Yes/No? Why?</td>
</tr>
<tr>
<td>8.</td>
<td>What is the most significant threat to Natural Resources?</td>
</tr>
<tr>
<td>9.</td>
<td>How will this threat place pressure on all-natural resources? Explain.</td>
</tr>
<tr>
<td>10.</td>
<td>What impact do Natural Resources have on the environment?</td>
</tr>
<tr>
<td>11.</td>
<td>What are some issues revolving around Natural Resources? Explain.</td>
</tr>
<tr>
<td>12.</td>
<td>What is resource recovery? How can this be beneficial to the environment?</td>
</tr>
<tr>
<td>13.</td>
<td>Provide ways of which we can conserve our Natural Resources.</td>
</tr>
</tbody>
</table>

b. The first group to finish this with all the correct answers will receive a prize.

5. **Conclusion**
   
a. Tomorrow we will look at the human impact on the Earth in terms of conservation, going green, renewable resources, pollution.

b. Go out and make this world a better place for you and I.
Natural Resources Scavenger Hunt

Using the following website: [http://www.eschooltoday.com/naturalresources/what-is-a-natural-resource.html](http://www.eschooltoday.com/naturalresources/what-is-a-natural-resource.html)

You are to go on a scavenger hunt and find the following information. The first group to finish this with all the correct answers will receive a prize.

1. What are Natural Resources?

2. Identify all the natural resources and what we receive from them.

3. What are the two types of Natural Resources? What other examples of these resources are there?

4. What is the difference between the two types of Natural Resources?

5. In a year, how much does the world consume in natural materials?

6. In what three forms do people consume Natural Resources? Provide examples
7. Are Natural Resources distributed evenly? Yes/No? Why?

8. What is the most significant threat to Natural Resources?

9. How will this threat place pressure on all-natural resources? Explain.

10. What impact do Natural Resources have on the environment?

11. What are some issues revolving around Natural Resources? Explain.

12. What is resource recovery? How can this be beneficial to the environment?

13. Provide ways of which we can conserve our Natural Resources.
Curriculum Standard(s)

| AFNR-BAS-12 | Apply principles of environmental science as it relates to agricultural production and sustainability |
| AFNR-BAS-10 | Demonstrate basic skills in natural resource management |

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<thead>
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<th>Learning Objective(s)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to list 5 ways in which humans are impacting Earth. Students will be able to label these impacts as positive or negative.</td>
<td>1. Human Impact Graphic Organizer</td>
</tr>
</tbody>
</table>

Materials Needed:

- Human Impact Graphic Organizer
- Chromebook
- Pencil

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time, Large and Small Group Work</th>
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<tbody>
<tr>
<td>1. Bell Work</td>
<td>4 Mins</td>
</tr>
<tr>
<td>a. What is your role in conservation as a human?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td>3 Mins</td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. Over the past 3 days, we have been looking at Ecology, Conservation, and Natural Resources, and pollution.</td>
<td>20 Mins</td>
</tr>
<tr>
<td>a. How do humans play a role in all 3 areas?</td>
<td></td>
</tr>
<tr>
<td>i. Have students participate in a large group discussion so they can talk about the human impacts that they recognize.</td>
<td></td>
</tr>
<tr>
<td>a. Use Google Safe Search to Conduct your research about Human Impact on Earth. Here are some impacts for you to research but I will offer extra credit for others that you deem a credible impact.</td>
<td></td>
</tr>
<tr>
<td>i. Things to look into</td>
<td></td>
</tr>
<tr>
<td>1. Pros and Cons</td>
<td></td>
</tr>
<tr>
<td>2. Solution</td>
<td></td>
</tr>
<tr>
<td>a. Deforestation</td>
<td></td>
</tr>
<tr>
<td>b. Urbanization</td>
<td></td>
</tr>
</tbody>
</table>
5. Group Discussion about findings
   a. Now that you have looked at the 6 areas that I asked you to research, let's discuss what we found.
      i. Deforestation
         1. What is it?
         2. What are the pros?
         3. What are the cons?
         4. Is there a solution?
      ii. Urbanization
         1. What is it?
         2. What are the pros?
         3. What are the cons?
         4. Is there a solution?
      iii. Desertification
         1. What is it?
         2. What are the pros?
         3. What are the cons?
         4. Is there a solution?
      iv. Erosion
         1. What is it?
         2. What are the pros?
         3. What are the cons?
         4. Is there a solution?
      v. Air and Water Quality
         1. What is it?
         2. What are the pros?
         3. What are the cons?
         4. Is there a solution?
      vi. Water Flow
         1. What is it?
         2. What are the pros?
         3. What are the cons?
         4. Is there a solution?

6. Conclusion
   a. Tomorrow we are going to look at what we can do to make a difference. You will be challenged to complete one of the tasks over the weekend. So think about your weekend and where you can fit in a time to change the world.
HUMAN IMPACTS ON THE ENVIRONMENT GRAPHIC ORGANIZER

List possible benefits in the Pros column. List possible negative outcomes in the Cons column. List possible solutions in the solution column.

<table>
<thead>
<tr>
<th>Human Impacts</th>
<th>PROS</th>
<th>CONS</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deforestation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urbanization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desertification</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erosion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air and Water Quality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Flow</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Day 25  
Mrs. Katelyn Schultz  
Title: How can humans help save the Earth and the resources it provides?  
Time: 44 Minutes  
Grade: 8th Grade  
Subject Area: Lab Science- Agriculture Education

Curriculum Standard(s)

<table>
<thead>
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<th>Curriculum Standard(s)</th>
<th>Description</th>
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<tbody>
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<td>AFNR-BAS-12</td>
<td>Apply principles of environmental science as it relates to agricultural production and sustainability</td>
</tr>
<tr>
<td>AFNR-BAS-10</td>
<td>Demonstrate basic skills in natural resource management</td>
</tr>
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<tr>
<th>Learning Objective(s)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to design a flyer of an idea that they have for people in the community to do to help save the Earth and its resources.</td>
<td>1. Earth Saving Flyer</td>
</tr>
</tbody>
</table>

Materials Needed:

- Earth Saving Flyer Rubric
- Earth Saving Flyer Checklist
- Chromebook
- Paper
- Colored Pencils
- Markers
- Crayons
- Pencil

Lesson Procedures:

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<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. This week we looked at our Earth the good and the bad things that have been going on in the world.</td>
<td>3 Mins</td>
</tr>
<tr>
<td>a. How can we make a change?</td>
<td></td>
</tr>
<tr>
<td>b. Is there something in our community that we can do to start a movement?</td>
<td></td>
</tr>
<tr>
<td>i. Have students come up with a different idea.</td>
<td></td>
</tr>
<tr>
<td>4. Design an Activity and Flyer</td>
<td>30 Mins</td>
</tr>
<tr>
<td>a. You are going to use the activity you started or come up with a different one.</td>
<td></td>
</tr>
<tr>
<td>i. Needs to be approved by the teacher first.</td>
<td></td>
</tr>
<tr>
<td>b. Then, create a flyer for the activity. Make people want to come and make the Earth a better place.</td>
<td></td>
</tr>
</tbody>
</table>
i. Things to think about

1. Who? Have a clear audience (students, adults, elderly)
2. What? Message (What is the point you are trying to get across?)
3. Rough Draft (Decide how it is going to look)
4. Where? Place (Where is this taking place, Lena? Illinois? The United States? Another State?)
5. When? When is the event taking place?
6. Colorful (No white on the flyer)
7. 2 or more pictures
8. Creative title
9. Easily readable font
10. Sources listed on the back

c. You can make a flyer yourself or you may use Google Docs or Google Slides.
d. You will present these ideas when you complete your flyer.
e. Use the checklist and the rubric to guide your decisions

5. Clean Up
   a. Put all coloring supplies away.
   b. Put computers away.

6. Conclusion
   a. If you do not finish, it is homework. Bring it back tomorrow.
   b. Let’s see if we can get your idea to become reality.
EARTH SAVING FLYER PROJECT CHECKLIST

Students are creating a project that will help make a positive impact on the planet. Students will need to advertise their event through a flyer. Students should make it colorful and eye-catching. Use the following checklist to make sure you are covering everything.

- Have a clear audience (students, adults, elderly)
- Message (What is the point you are trying to get across?)
- Rough Draft (Decide how it is going to look)
- Place (Where is this taking place, Lena? Illinois? The United States? Another State?)
- When is the event taking place?
- Colorful (No white on the flyer)
- 2 or more pictures
- Creative title
- Easily readable font
- Sources listed on the back
Earth Saving Flyer

<table>
<thead>
<tr>
<th>Category</th>
<th>4 - Excellent</th>
<th>3 - Good</th>
<th>2 - Almost</th>
<th>1- Not Yet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attractiveness &amp; Organization &amp;</td>
<td>The flyer is exceptionally attractive and is organized according to the flyer checklist.</td>
<td>The flyer is attractive and is mostly organized according to the flyer checklist.</td>
<td>The flyer is not attractive or is not organized according to the flyer checklist.</td>
<td>The flyer is not very attractive and is not organized according to the flyer checklist.</td>
</tr>
<tr>
<td>Interest</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Content Accuracy</td>
<td>The flyer has all of the required information (see checklist).</td>
<td>The flyer has most of the required information (see checklist).</td>
<td>The flyer has some of the required information (see checklist).</td>
<td>The flyer has little or none of the required information (see checklist).</td>
</tr>
<tr>
<td>Writing Mechanics</td>
<td>All of the writing is done in complete sentences. Capitalization and</td>
<td>Most of the writing is done in complete sentences. Most of the</td>
<td>Some of the writing is done in complete sentences. Some of the</td>
<td>Most of the writing is not done in complete sentences. Most of the</td>
</tr>
<tr>
<td></td>
<td>punctuation are correct throughout the flyer.</td>
<td>capitalization and punctuation are correct throughout the flyer.</td>
<td>capitalization and punctuation are correct throughout the flyer.</td>
<td>capitalization and punctuation are not correct through the flyer.</td>
</tr>
<tr>
<td>Graphics and Pictures</td>
<td>The graphics are appropriate and go well with the text and there is a good</td>
<td>The graphics are appropriate and go well with the text, but there are</td>
<td>The graphics are appropriate but do not go well with the text.</td>
<td>The graphics are not appropriate and do not go with the accompanying text.</td>
</tr>
<tr>
<td></td>
<td>mix of text and graphics.</td>
<td>so many that they distract from the text or there are too few.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sources</td>
<td>There are complete and proper citations from the sources provided and the</td>
<td>There are citations from the sources provided and some identification of</td>
<td>There are citations and identification of the author but either or both</td>
<td>No citation of sources or identification of the author is listed on the flyer.</td>
</tr>
<tr>
<td></td>
<td>complete identification of the author as shown on the checklist.</td>
<td>the author as shown on the checklist.</td>
<td>are incomplete or inaccurate.</td>
<td></td>
</tr>
</tbody>
</table>

TOTAL
<table>
<thead>
<tr>
<th>Day</th>
<th>Essential Question</th>
<th>Objective</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 26:</td>
<td>What is Agriscience?</td>
<td>Students will be able to state 4 ways in which we apply science to agriculture.</td>
<td>Agriscience Exit Ticket</td>
</tr>
<tr>
<td>Day 27:</td>
<td>What is genetic engineering and why does it matter?</td>
<td>Students will be able to understand the public concern for technological advancements in agriculture, such as genetically modified organisms.</td>
<td>GMO Critical Thinking Part 1</td>
</tr>
<tr>
<td>Day 28:</td>
<td>What are the risks and benefits of genetically modified crops?</td>
<td>Students will be able to understand the influence of current and up and coming technology on selected segments of the economy.</td>
<td>GMO Fact or Fiction</td>
</tr>
<tr>
<td>Day 29:</td>
<td>How genetic engineering is used in the production of our food?</td>
<td>Students will be able to determine how genetic engineering is used in the production of their food.</td>
<td>GMO Critical Thinking Part 2</td>
</tr>
<tr>
<td>Day 30:</td>
<td>When did some of the food we eat become an approved GMO food source?</td>
<td>Students will be able to explain one positive and one negative effect of the current use of GMOs.</td>
<td>GMO Spotlight Project</td>
</tr>
</tbody>
</table>
What is Agriscience?

Mrs. Schultz

Agriscience Is...

- the application of science to agriculture
- the “why” and “how” things are done (it is science in action!)
- Animals, plants, chemicals, soil, and machinery all involve science in some way.
- For Example: In order to design a piece of harvesting equipment knowledge of plants (biological science), soil (earth science), and mechanics (physical science) are required.
4 Major Areas of Science

1. Life Science
2. Physical Science
3. Environmental Science
4. Social Science

Life Sciences

- concerns living things (plants, animals, and other organisms); usually known as Biology and includes:
  - Botany: the scientific study of plants
  - Agronomy: the science of soil management and crop production
  - Horticulture: the practice of growing and managing plants for beauty or food
  - Entomology: the study of insects
  - Animal Science: the science of raising and managing animals for production and pleasure
Physical Sciences

can be divided into 3 areas:

▶ Earth Science: the study of the environment in which we live (the air, water, soil, etc.)
▶ Chemistry: deals with the make-up of matter and their properties including elements and compounds
▶ Physics: concerned with the nature and the physical properties of matter and energy including mechanics, heat, sound, and electricity

Environmental Science

the study of the environment, its conditions, and the interactions between the living and nonliving things within it; includes:

▶ Ecology: the study of organisms and their interactions with each other and their environment
▶ Geology: the science of the earth’s physical properties and its history
▶ Hydrology: the science of the earth’s water and its movement
▶ Oceanography: the study of the physical and biological properties of the sea
Social Science

- the study of human society
- How does it relate to agriculture?
  - populations affect the demand for food
  - cultural customs determine food and processing preferences
  - public perceptions influence markets

Technology in Agriscience

- Technology is the actual application of science for practical purposes.
- leads to new devices and methods for better production and processing
- helps to make work easier, increase yields, and use resources more efficiently
Advances in Agriscience

- Sustainable agriculture is the use of practices to maintain the ability to grow crops and produce livestock. Examples:
  - crop rotation
  - biological control of insects and disease
  - disease prevention
  - improved crops

Biotechnology

- the use of biological processes for industrial and other purposes
  - production of insulin by genetically engineered bacteria
  - "Round-Up Ready" crops: crops that are engineered to be resistant to specific herbicides
  - artificial insemination and embryo transfer increase productivity and improve genetics
What is Agriscience?

1. Agriscience is
   a. ____________________________________________
   b. ____________________________________________
   c. ____________________________________________
   i. For Example: In order to design a piece of harvesting equipment knowledge of plants (biological science), soil (earth science), and mechanics (physical science) are required.

2. 4 Major Areas of Science
   a. ____________________________________________
   b. Physical Science
   c. ____________________________________________
   d. Social Science

3. Life Science
   a. ____________________________________________
   i. _____________: the scientific study of plants
   ii. _____________: the science of soil management and crop production
   iii. _____________: the practice of growing and managing plants for beauty or food
   iv. _____________: the study of insects
   v. _____________: the science of raising and managing animals for production and pleasure

4. Physical Science
   a. can be divided into 3 areas:
   i. ________________: the study of the environment in which we live (the air, water, soil, etc.)
   ii. ________________: deals with the make-up of matter and their properties including elements and compounds
   iii. ________________: concerned with the nature and the physical properties of matter and energy including mechanics, heat, sound, and electricity
5. Environmental Science
   a. ________________________________________________
      i. _________________: the study of organisms and their interactions with each other
         and their environment
      ii. _________________: the science of the earth’s physical properties and its history
      iii. _________________: the science of the earth’s water and its movement
      iv. _________________: the study of the physical and biological properties of the sea

6. Social Science
   a. ________________________________________________
   b. How does it relate to agriculture?
      i. ________________________________________________
      ii. cultural customs determine food and processing preferences
      iii. ________________________________________________

7. Technology in Agriscience
   a. Technology is the actual ________________________________________________
   b. leads to new devices and methods for better production and processing
   c. helps to make work easier, increase yields, ________________________________________________

8. Advances in Agriscience
   a. Sustainable agriculture is the use of practices to maintain the ability to grow crops and
      produce livestock. Examples:
      i. ________________________________________________
      ii. ________________________________________________
      iii. ________________________________________________
      iv. ________________________________________________

9. Biotechnology
   a. the use of biological processes for industrial and other purposes
      i. ________________________________________________
      ii. _________________: crops that are engineered to be resistant to specific
         herbicides
      iii. artificial insemination and embryo transfer increase productivity and improve
         genetics
Agriscience Exit Ticket

What are the 4 major areas of science that impact Agriscience?
1. 
2. 
3. 
4. 

What are 4 ways in which we apply science to agriculture?
1. 
2. 
3. 
4. 

Name _________________________

Agriscience Exit Ticket

What are the 4 major areas of science that impact Agriscience?
1. 
2. 
3. 
4. 

What are 4 ways in which we apply science to agriculture?
1. 
2. 
3. 
4.
Day 27
Title: What is genetic engineering and why does it matter?
Time: 44 Minutes
Grade: 8th Grade
Subject Area: Lab Science- Agriculture Education

Curriculum Standard(s)

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
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<tbody>
<tr>
<td>AFNR-BAS-8</td>
<td>Identify the different areas of agriscience and relate the scientific classification system to organize and research the agriscience field</td>
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<tr>
<td>AFNR-BAS-11</td>
<td>Apply principles of science to food processing to provide a safe, wholesome and nutritious food supply</td>
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Learning Objectives (Benchmark) and Assessment:

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<td>1. Students will be able to understand the public concern for technological advancements in agriculture, such as genetically modified organisms.</td>
<td>1. GMO Critical Thinking Part 1 and 2</td>
</tr>
</tbody>
</table>

Materials Needed:
- GMO PowerPoint
- Food Label Cards
- Critically Thinking GMO Compare and Contrast
- Critically Thinking GMO in Pairs
- Chromebook
- Pencil

Lesson Procedures:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional Strategy: Individual Work Time, Large and Small Group Work</td>
<td></td>
</tr>
<tr>
<td>1. Bell Work</td>
<td>4 Mins</td>
</tr>
<tr>
<td>a. What do these labels mean to you?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
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<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
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<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. What did you say about the labels that were posted on the board?</td>
<td>18 Mins</td>
</tr>
<tr>
<td>i. Have you seen them before?</td>
<td></td>
</tr>
<tr>
<td>ii. Where have you seen them?</td>
<td></td>
</tr>
<tr>
<td>iii. Do you know what they mean?</td>
<td></td>
</tr>
<tr>
<td>b. Have you seen these labels? (NON-GMO Project)</td>
<td></td>
</tr>
<tr>
<td>i. Are there any food labels that could be misleading or meaningless?</td>
<td></td>
</tr>
<tr>
<td>4. Food Label Cards</td>
<td></td>
</tr>
<tr>
<td>a. Make 2 piles of cards</td>
<td></td>
</tr>
<tr>
<td>i. True non-GMO Food Labels</td>
<td></td>
</tr>
<tr>
<td>ii. Misleading non-GMO Food Labels “Imposters”</td>
<td></td>
</tr>
<tr>
<td>5. Crops that have been genetically modified</td>
<td></td>
</tr>
</tbody>
</table>
a. Alfalfa  
b. Canola  
c. Corn (field and sweet)  
d. Cotton  
e. Papaya  
f. Potatoes  
g. Soybeans  
h. Squash  
i. Sugar Beets  
j. Granny Smith Apple

6. GMOs Are  
a. Plants with one or more genetic characteristics that were inserted into the genome using biotechnology.

7. GMOs Are NOT  
a. Plants that were improved through artificial selection processes like cross breeding, hybridization, or mutagenesis.  
   i. Critically Thinking GMOs  
      1. Crop Production Methods - Venn Diagram

8. GMO Regulation Process  
a. It takes many years for a new GM crop to be developed, tested, and finally approved for commercial release.  
b. Prior to the release of a new GM crop it is tested and monitored by three primary agencies in the United States.  
   i. Food and Drug Administration  
   ii. United States Department of Agriculture  
   iii. Environmental Protection Agency

9. Food and Drug Administration  
a. FDA regulates the safety of food for humans and animals, including foods produced from genetically engineered (GE) plants.  
b. Foods from GE plants must meet the same food safety requirements as foods derived from traditionally bred plants.

10. United States Department of Agriculture  
a. The USDA, EPA, and FDA work to ensure that crops produced through genetic engineering for commercial use are properly tested and studied to make sure they pose no significant risk to consumers or the environment.

11. Environmental Protection Agency  
a. The EPA focuses on reviewing environmental impacts of a GE crop prior to field testing and the commercial release of the seed.  
b. They ensure there are no unintended consequences to honeybees, other beneficial insects, earthworms, fish, or the environment in general.  
c. They also look for any impact they may have on other crops.

12. Critically Thinking in Pairs  
a. You will need a Chromebook to research the following questions. Go step by step to complete this assignment with a partner.  
   i. Step 1:  
      1. After being separated into pairs, you will be assigned a position on the use of GMOs in our food supply. Mark it below:  
   ii. Step 2:  
      1. Find evidence to support your assigned position. List 3 pieces of evidence below in order from the highest quality to lowest quality.
Choose these 3 arguments based upon what you have learned in this lesson as well as further research you perform on your own. Your notes on the first two pages of this handout will be helpful.

iii. Step 3:
   1. Formulate your argument to support the position you have been assigned. Summarize it below in 1-2 paragraphs.

iv. Step 4:
   1. With your critical thinking partner, discuss both of your final positions on the use of GMOs.
   2. Together, discuss the evidence for each position. Identify which portions of the position are based upon scientific research and which portions are based more on social issues.
      a. List them in the chart

v. Step 5:
   1. Reach a consensus. The use of GMOs is a topic that combines both social and scientific issues. Your consensus will be a combination of the two opposing views based upon multiple lines of evidence. Below, formulate a NEW position, which addresses the needs and wants of both sides of the issue. Keep in mind that the consensus may include multiple solutions.

13. Conclusion
   a. What stance do you take on GMOs? Can you defend it? Does the media play a role in your decision? Think about that as we move forward to look at this concept.

References

https://www.agclassroom.org/teacher/matrix/lessonplan.cfm?lpid=86
What do these labels mean to you?

Have you seen these labels?

Are there any food labels that could be misleading or meaningless?
Make 2 piles of cards

True non-GMO Food Labels
Misleading non-GMO Food Labels “Imposters”

Crops that have been genetically modified:

- Alfalfa
- Canola
- Corn (field and sweet)
- Cotton
- Papaya
- Potatoes
- Soybeans
- Squash
- Sugar Beets
- Granny Smith Apple
GMOs are:

- Plants with one or more genetic characteristics that were inserted into the genome using biotechnology.

- Plants that were improved through artificial selection processes like cross-breeding, hybridization, or mutagenesis.

---

### GMO Crop Table

<table>
<thead>
<tr>
<th>Trait</th>
<th>Crop</th>
<th>Genes/Proteins</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Examples:**
- **Roundup Ready**
- **Bt crops**

**Summary:**
- **Crop:** Commonly grown crops.
- **Trait:** Genetic modification.
- **Genes/Proteins:** Specific genes or proteins introduced.
- **Other:** Additional traits or characteristics.

---

**Notes:**
- **Roundup Ready:** Resistant to Roundup herbicide.
- **Bt crops:** Expresses Bt toxins to control pests.
GMO Regulation Process

• It takes many years for a new GM crop to be developed, tested, and finally approved for commercial release.

• Prior to the release of a new GM crop it is tested and monitored by three primary agencies in the United States.
  – Food and Drug Administration
  – United States Department of Agriculture
  – Environmental Protection Agency
Food and Drug Administration

- FDA regulates the safety of food for humans and animals, including foods produced from genetically engineered (GE) plants.
- Foods from GE plants must meet the same food safety requirements as foods derived from traditionally bred plants.

United States Department of Agriculture

- The USDA, EPA, and FDA work to ensure that crops produced through genetic engineering for commercial use are properly tested and studied to make sure they pose no significant risk to consumers or the environment.
Environmental Protection Agency

• The EPA focuses on reviewing environmental impacts of a GE crop prior to field testing and the commercial release of the seed.

• They ensure there are no unintended consequences to honeybees, other beneficial insects, earthworms, fish, or the environment in general.

• They also look for any impact they may have on other crops.
Soymilk

2% Milk

Cinnamon Crunch Cereal

Rice Milk
Yogurt

Mango Baby Food

Banana Baby Food

*Wheat Bread
Critically Thinking GMOs
Crop Production Methods

Growing a GMO Crop
Growing a non-GMO Crop
Critically Thinking in Pairs

**Step 1:** After being separated into pairs, you will be assigned a position on the use of GMOs in our food supply. Mark it below:

- [ ] I am in favor of GMOs
- [ ] I am against GMOs

**Step 2:** Find evidence to support your assigned position. List 3 pieces of evidence below in order from the highest quality to lowest quality. Choose these 3 arguments based upon what you have learned in this lesson as well as further research you perform on your own. Your notes on the first two pages of this handout will be helpful.

1. ____________________________  ____________________________  ____________________________
   __________________________________________________________________________________

2. ____________________________  ____________________________  ____________________________
   __________________________________________________________________________________

3. ____________________________  ____________________________  ____________________________
   __________________________________________________________________________________

**Step 3:** Formulate your argument to support the position you have been assigned. Summarize it below in 1-2 paragraphs.
Step 4: With your critical thinking partner, discuss both of your final positions on the use of GMOs. Together, discuss the evidence for each position. Identify which portions of the position are based upon scientific research and which portions are based more on social issues. List them below:

<table>
<thead>
<tr>
<th>Scientific Issues</th>
<th>Social Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
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</table>

Step 5: Reach a consensus. The use of GMOs is a topic that combines both social and scientific issues. Your consensus will be a combination of the two opposing views based upon multiple lines of evidence. Below, formulate a NEW position, which addresses the needs and wants of both sides of the issue. Keep in mind that the consensus may include multiple solutions.
Curriculum Standard(s)

| AFNR-BAS-8 | Identify the different areas of agriscience and relate the scientific classification system to organize and research the agriscience field |
| AFNR-BAS-11 | Apply principles of science to food processing to provide a safe, wholesome and nutritious food supply |

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<td>1. Students will be able to understand the public concern for technological advancements in agriculture, such as genetically modified organisms.</td>
<td>1. GMO Fact or Fiction</td>
</tr>
</tbody>
</table>

Materials Needed:

GMO Fact or Fiction PowerPoint

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time, Large and Small Group Work</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bell Work</td>
<td>4 Mins</td>
</tr>
<tr>
<td>a. Have you ever seen news reports, memes, blogs, or other social media posts in strong opposition or support of GMOs?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td>25 Mins</td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. Class Discussion over the question of the day.</td>
<td></td>
</tr>
<tr>
<td>a. Have you ever seen news reports, memes, blogs, or other social media posts in strong opposition or support of GMOs?</td>
<td></td>
</tr>
<tr>
<td>i. This is a very controversial topic in our world today.</td>
<td></td>
</tr>
<tr>
<td>ii. So let’s take a look at some Fact or Fictions on GMO</td>
<td></td>
</tr>
<tr>
<td>iii. This is a paper that you will fold down the middle and you will tell us if it is fact or fiction.</td>
<td></td>
</tr>
<tr>
<td>4. GMO FACT OR FICTION</td>
<td></td>
</tr>
<tr>
<td>a. GMOs are created by injecting chemicals into food AFTER it is harvested.</td>
<td></td>
</tr>
<tr>
<td>i. Fiction</td>
<td></td>
</tr>
<tr>
<td>1. GMOs are developed through genetic engineering where scientists identify and insert specific traits into the DNA of the seed before it is ever planted. The plant grows just like conventional (non-GMO) seeds. The transgenic trait is then transferred to other varieties through traditional cross-breeding.</td>
<td></td>
</tr>
<tr>
<td>a. See “The Life of a Seed-Jake, a GMO Seed”</td>
<td></td>
</tr>
</tbody>
</table>
b. After a GMO is developed, it is thoroughly evaluated by the USDA, FDA, and EPA to identify unintended consequences to the environment or to our health if consumed.
   i. Fact
      1. It takes many years for a GMO to be approved first for field testing and second for commercial production.

c. GMOs have bombarded the produce section of the grocery store. It is difficult to avoid GMO fruits and vegetables.
   i. Fiction
      1. There are only 10 approved varieties of GMO plants. Of those crops, 5 could be found in the produce section. They are sweet corn, papaya, potatoes, squash, and the Arctic apple. (The arctic apple won’t be available on store shelves for a few more years)

d. The bulk of GM crops that are harvested in the US are for the use of livestock feed.
   i. Fact
      1. GM field Corn, Alfalfa, Soybeans, and the by-products of sugar beets and cotton harvested in the United States are all used to feed livestock.

e. If I purchase food labeled with the USDA Organic seal, I know these products did not grow from a GM seed.
   i. Fact
      1. In addition to other growth and production requirements, foods with the “Organic” seal were not grown from GM seeds.

f. Using GM crop varieties in every country would be beneficial.
   i. Fiction
      1. Many third world countries do not have the technology and resources to utilize the benefits of GM crops. For example, if a farmer in another country does not have access to herbicides, using herbicide tolerant crops would not be beneficial.

gh. The implementation of GM seeds over the last 20 years has increased the price of food.
   i. Fiction
      1. A study shows that the prices of corn, soybeans and canola would probably be 5-9% higher than if GM technology was not available to farmers.
         a. The Production and Price Impact of Biotech Crops

g. Health studies about the safety of consuming GM crops are less than 20 years old.
   i. Fact
      1. GM crops have only been in production since 1996. While studies have shown they are safe, their scope is limited to the amount of time they have been in production and use.

i. GMOs are NOT directly linked to being a cause for cancer.
   i. Fact
      1. GM crop varieties pose no greater risk of increasing the risk of cancer than their conventional counterparts.
         a. A decade of EU-funded GMO Research
         b. Compilation of Research on GM Crops

j. Studies show that GMOs are linked to an increase in allergies.
i. Fiction
   1. 90% of all allergies are caused by peanuts, tree nuts, milk, eggs, wheat, soy, shellfish, and fish. To date, only soy even has a GM variety. See more explanation:
      a. Are GMOs causing an increase in allergies?

k. GMOs are contributing to the death of butterflies.
   i. Fiction
   1. Butterflies would need to eat the Bt found in GM crops to have it kill them. Butterflies are not pests, and therefore do not feed on the actual plants.
      a. Dominic Reisig, North Carolina State University

l. There aren’t any known environmental risks to producing and growing GM crops.
   i. Fiction
   1. Potential environmental risks are known, which leads to monitoring and testing before approval of a new GM crop. Scientists monitor GM crops to watch for unintended consequences that could be seen long term such as herbicide tolerance, biodiversity concerns, and effect on non-target organisms.

5. Review
   a. After completing the fact or fiction activity, summarize and help students synthesize what they have learned.
      i. Refer again to the pile of "imposter" food cards
      1. Why are so many foods at the grocery store labeled as "non-GMO" when that particular food product does not have a GMO counterpart?
         a. Likely due to heightened fear, misinformation, and consumers' lack of understanding of what GMOs are. In response, food companies have begun labeling their products.)
         b. Do you think this labeling practice helps or hurts the food industry? Why?
            i. (Answers will vary)

6. Conclusion
   a. Next we will look at how genetic engineering is used in the production of our food. Do you eat any GMOs? Go and look at some of the labels on your food at home. If you bring in a GMO product and a non GMO project, you will receive extra credit.

References

https://www.agclassroom.org/teacher(matrix/lessonplan.cfm?lpid=86
GMO Fact or Fiction?

Fact or Fiction?

*GMOs are created by injecting chemicals into food AFTER it is harvested.*

**Fiction**

GMOs are developed through genetic engineering where scientists identify and insert specific traits into the DNA of the seed before it is ever planted. The plant grows just like conventional (non-GMO) seeds. The transgenic trait is then transferred to other varieties through traditional cross-breeding.

*See “The Life of a Seed-Jake, a GMO Seed”*
Fact or Fiction?

After a GMO is developed, it is thoroughly evaluated by the USDA, FDA, and EPA to identify unintended consequences to the environment or to our health if consumed.

Fact

It takes many years for a GMO to be approved first for field testing and second for commercial production.

Fact or Fiction?

GMOs have bombarded the produce section of the grocery store. It is difficult to avoid GMO fruits and vegetables.

Fiction

There are only 10 approved varieties of GMO plants. Of those crops, 5 could be found in the produce section. They are sweet corn, papaya, potatoes, squash, and the Arctic apple. (The arctic apple won’t be available on store shelves for a few more years)
Fact or Fiction?

The bulk of GM crops that are harvested in the US are for the use of livestock feed.

**Fact**

GM field Corn, Alfalfa, Soybeans, and the by-products of sugar beets and cotton harvested in the United States are all used to feed livestock.

Fact or Fiction?

If I purchase food labeled with the USDA Organic seal, I know these products did not grow from a GM seed.

**Fact**

In addition to other growth and production requirements, foods with the “Organic” seal were not grown from GM seeds.
Fact or Fiction?

Using GM crop varieties in every country would be beneficial.

Fiction

Many third world countries do not have the technology and resources to utilize the benefits of GM crops. For example, if a farmer in another country does not have access to herbicides, using herbicide tolerant crops would not be beneficial.

Fact or Fiction?

GMOs are contributing to the death of butterflies.

Fiction

Butterflies would need to eat the Bt found in GM crops to have it kill them. Butterflies are not pests, and therefore do not feed on the actual plants.

Dominic Reisig, North Carolina State University
Fact or Fiction?

There aren’t any known environmental risks to producing and growing GM crops.

Fiction

Potential environmental risks are known, which leads to monitoring and testing before approval of a new GM crop. Scientists monitor GM crops to watch for unintended consequences that could be seen long term such as herbicide tolerance, biodiversity concerns, and effect on non-target organisms.
FACT

FICTION
Day 29

Title: How genetic engineering is used in the production of our food?  
Grade: 8th Grade  
Subject Area: Lab Science- Agriculture Education

Time: 44 Minutes

Curriculum Standard(s)

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<td>1. Critically Thinking GMOs Part 2</td>
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Materials Needed:

- Crop Supply and Demand Challenge Cards
- Chromebook
- Pencil
- Critically Thinking GMOs Part 2

Lesson Procedures:

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<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. The use and implementation of biotechnology</td>
<td></td>
</tr>
<tr>
<td>a. Discuss how the point of view of a farmer, a scientist, and a consumer could have both differences and similarities.</td>
<td>28 Mins</td>
</tr>
<tr>
<td>i. List these three people on the board and any others your students identify as having a different perspective.</td>
<td></td>
</tr>
<tr>
<td>b. Determine the success of producing a crop.</td>
<td></td>
</tr>
<tr>
<td>i. The farmer needs to be able to grow a safe product and produce an adequate harvest to be viable economically.</td>
<td></td>
</tr>
<tr>
<td>1. Farmers provide our food supply.</td>
<td></td>
</tr>
<tr>
<td>ii. Consumers create a demand for a product when they purchase the product to meet their needs.</td>
<td></td>
</tr>
<tr>
<td>1. The production of our food follows simple laws of supply and demand.</td>
<td></td>
</tr>
<tr>
<td>a. A successful crop satisfies the farmer and the consumer.</td>
<td></td>
</tr>
</tbody>
</table>
c. Challenges will arise in meeting the ultimate goal.
   i. Some challenges may stop the production or consumption of food altogether, and others may just slow it down.

d. Crop Supply and Demand Challenge Cards
   i. You will be getting a Crop supply and demand challenge card.
   ii. Each group will read the card and prepare to explain the challenge to the class.
      1. Have each student group present their challenge to the class.
         a. Is the challenge is faced by the farmer in order to produce a supply of food?
         b. Is it a "demand" from the consumer.
            i. Tape the card to the board on the appropriate side.
      2. Take notes on Critically Thinking GMOs Part 2 handout by listing the benefits and risks of GMOs.

4. Review
   a. There are many methods and tools available to overcome these challenges.
      i. Methods available to farmers range from
         1. organic (without the use of chemicals)
         2. Conventional (using chemicals if necessary)
      ii. Tools include the use of various
         1. Traditional methods of selective breeding
         2. Biotechnology to create GMOs.
   b. The science of genetic modification is sound but, it still must be accepted by consumers to succeed.
   c. Consumers create the demand.

5. Conclusion
   a. Please turn in your Critically Thinking GMOs Part 2
   b. Tomorrow you will be looking at a crop. You will research and then present your findings to class.

References

https://www.agclassroom.org/teacher/matrix/lessonplan.cfm?lpid=86
Pests

Pests are destructive insects or other animals that attack crops. Depending on the crop and the severity of the infestation they can cause minor damage or destroy a crop completely.

There are several methods of controlling pests. One method is to spray the plant with a chemical called an “insecticide” to kill the pests. There are also many other methods that do not use chemicals such as beneficial insects, and integrated pest management (IPM).
Weeds

Weeds are unwanted plants that grow in competition to a cultivated plant. Weeds growing in a field take the water and soil nutrients that the crop needs for healthy growth. They also diminish the quality of the harvest.

There are several methods of controlling weeds. One method is to spray a chemical called a “herbicide” to kill the unwanted plants. Other organic forms of weed control also exist such as cover crops and using various cultivation practices to minimize weeds.
Disease

Just like people and animals, plants can get diseases which lead to abnormal growth or death of the plant. Plant diseases can be caused by fungi, bacteria, or viruses.

Some diseases can be killed or controlled through chemicals such as a fungicide. Non-chemical control methods also exist. In either case, some diseases are very difficult to control and lead to a partial or complete crop loss.
Drought

Water is a natural resource that is crucial to the healthy growth of a plant. Seasons of drought can significantly decrease a crop harvest.

Some plants inherently require more water for growth than other plants. Methods of selective breeding can be used to create varieties of plants with deeper root systems and characteristics that allow them to grow with less water.
Provide What Consumers Want

Farmers must produce a crop to meet the demand of consumers. To do this, the crop must be:

1. Safe
2. Affordable
3. Available (enough supply to meet demand)
Damage in Shipping

Many of the plant-based foods we eat must be grown in a specific climate or region and then be shipped to local grocery stores to be purchased. If the product is damaged in shipping, consumers are not likely to purchase it.
Spoilage

All food will begin to spoil after a given amount of time, often referred to as a “shelf life.” Some food lasts longer than others. Consumers are not likely to purchase food that has or will begin spoiling before they can use it.
Convenience

As a whole, many consumers choose to purchase food that is quick and easy to prepare. For example they may want fruit and vegetables that can be cut up ahead of time without browning or discoloration.
Cost

Customers prefer to purchase food that is priced low or fair. There are many factors influencing the cost of our food. The business laws of supply and demand apply. Crop failures due to disease, pests, drought or other disasters decrease food supply and therefore increase the cost of food.
Flavor

Taste, flavor, and texture are important to consumers. Each of these factors are influenced by factors such as the plant variety, ripeness, and growing technique.
Critically Thinking GMO

<table>
<thead>
<tr>
<th>Benefits of GMO Crops</th>
<th>Risks of GMO Crops</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Day 30  
Mrs. Katelyn Schultz

Title: When did some of the food we eat become an approved GMO food source?  
Time: 44 Minutes

Grade: 8th Grade  
Subject Area: Lab Science- Agriculture Education

Curriculum Standard(s)

<table>
<thead>
<tr>
<th>AFNR-BAS-8</th>
<th>Identify the different areas of agriscience and relate the scientific classification system to organize and research the agriscience field</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFNR-BAS-11</td>
<td>Apply principles of science to food processing to provide a safe, wholesome and nutritious food supply</td>
</tr>
</tbody>
</table>

Learning Objectives (Benchmark) and Assessment:

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to explain one positive and one negative effect of the current use of GMOs.</td>
<td>1. GMO Spotlight Project</td>
</tr>
</tbody>
</table>

Materials Needed:

Chromebook  
Pencil  
GMO Spotlight Paper

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time, Large and Small Group Work</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bell Work</td>
<td>4 Mins</td>
</tr>
<tr>
<td>a. What is a GMO food that you eat every day?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td></td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
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<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. What GMO food do we consume or use?</td>
<td></td>
</tr>
<tr>
<td>a. Let's take a look at a couple</td>
<td></td>
</tr>
<tr>
<td>i. Apples</td>
<td></td>
</tr>
<tr>
<td>ii. Beets</td>
<td></td>
</tr>
<tr>
<td>iii. Cotton</td>
<td></td>
</tr>
<tr>
<td>iv. Papaya</td>
<td></td>
</tr>
<tr>
<td>v. Potatoes</td>
<td></td>
</tr>
<tr>
<td>vi. Corn</td>
<td></td>
</tr>
<tr>
<td>vii. Alfalfa</td>
<td></td>
</tr>
<tr>
<td>viii. Canola</td>
<td></td>
</tr>
<tr>
<td>ix. Soybeans</td>
<td></td>
</tr>
<tr>
<td>x. Squash</td>
<td></td>
</tr>
<tr>
<td>xi. Sugar</td>
<td></td>
</tr>
<tr>
<td>b. You and a partner are going to be assigned one of the fruits, vegetables, or fiber that we just discussed.</td>
<td></td>
</tr>
<tr>
<td>c. Your goal is to research and create an infographic on the product.</td>
<td></td>
</tr>
</tbody>
</table>
You need to remember what it means to look for reliable sources. Just writing down the first thing on Google is not going to cut it.

- You need to determine the products use?
- You need to identify when the product was first genetically modified and when it was approved for commercial use in the United States?
- What genetic trait(s) do varieties of that GMO contain that non-GMO varieties do not?
- Where was the genetic trait(s) obtained?

### 4. Presentations
- Share with us about your GMO.
- Cover all the questions you were asked to and provide us with your take on GMOs.

### 5. Conclusion
- We had a great week focusing on Agriscience.
- Next week we will take a look at Wildlife and Forestry. We will try to keep it local and look into what we are doing here in Illinois.

References

GMO Spotlight: CORN

1. What is corn used for?

2. When was the first genetically modified corn approved for commercial use in the United States?

3. What genetic trait(s) do varieties of GMO corn contain that non-GMO varieties do not?

4. Where was the genetic trait(s) obtained?
GMO Spotlight: Alfalfa

1. What is alfalfa used for?

2. When was the first genetically modified alfalfa approved for commercial use in the United States?

3. What genetic trait(s) do varieties of GMO alfalfa contain that non-GMO varieties do not?

4. Where was the genetic trait(s) obtained?
GMO Spotlight: Cotton

1. What is cotton used for?

2. When was the first genetically modified cotton approved for commercial use in the United States?

3. What genetic trait(s) do varieties of GMO cotton contain that non-GMO varieties do not?

4. Where was the genetic trait(s) obtained?
GMO Spotlight: Canola

1. What is canola used for?

2. When was the first genetically modified canola approved for commercial use in the United States?

3. What genetic trait(s) do varieties of GMO canola contain that non-GMO varieties do not?

4. Where was the genetic trait(s) obtained?
GMO Spotlight: Papaya

1. What are papayas used for?

2. When was the first genetically modified papaya approved for commercial use in the United States?

3. What genetic trait(s) do varieties of GMO papaya contain that non-GMO varieties do not?

4. Where was the genetic trait(s) obtained?
GMO Spotlight: Potato

1. What are potatoes used for?

2. When were the first genetically modified potatoes approved for commercial use in the United States?

3. What genetic trait(s) do varieties of GMO potatoes contain that non-GMO varieties do not?

4. Where was the genetic trait(s) obtained?
GMO Spotlight: Soybeans

1. What are Soybeans used for?

2. When were the first genetically modified soybeans approved for commercial use in the United States?

3. What genetic trait(s) do varieties of GMO soybeans contain that non-GMO varieties do not?

4. Where was the genetic trait(s) obtained?
GMO Spotlight: Squash

1. What is squash used for?

2. When was the first genetically modified squash approved for commercial use in the United States?

3. What genetic trait(s) do varieties of GMO squash contain that non-GMO varieties do not?

4. Where was the genetic trait(s) obtained?
GMO Spotlight: Sugar

1. What is sugar used for?

2. When was the first genetically modified sugar approved for commercial use in the United States?

3. What genetic trait(s) do varieties of GMO sugar contain that non-GMO varieties do not?

4. Where was the genetic trait(s) obtained?
GMO Spotlight: Beets

1. What are the beets used for?

2. When were the first genetically modified beets approved for commercial use in the United States?

3. What genetic trait(s) do varieties of GMO beets contain that non-GMO varieties do not?

4. Where was the genetic trait(s) obtained?
GMO Spotlight: Apple

1. What are apples used for?

2. When was the first genetically modified apple approved for commercial use in the United States?

3. What genetic trait(s) do varieties of GMO apple contain that non-GMO varieties do not?

4. Where was the genetic trait(s) obtained?
### Week 7: Wildlife and Forestry

<table>
<thead>
<tr>
<th>Day</th>
<th>Essential Question</th>
<th>Objective</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 31:</td>
<td>What is wildlife?</td>
<td>Students will be able to define wildlife and give 4 examples of wildlife in the world.</td>
<td>Wildlife Webquest</td>
</tr>
<tr>
<td>Day 32:</td>
<td>What is forestry?</td>
<td>Students will be able to define forestry and give an example of why it is important to agriculture.</td>
<td>Tree Advertisement</td>
</tr>
<tr>
<td>Day 33:</td>
<td>How does conservation come into effect when dealing with wildlife and forestry?</td>
<td>Students will be able to find a conservation plan and explain what steps are being taken to protect wildlife and forests.</td>
<td>A world with and a world without pictures</td>
</tr>
<tr>
<td>Day 34:</td>
<td>How do countries around the world conserve forestry and wildlife?</td>
<td>Students will be able to research the conservation actions around the world and present them to their peers.</td>
<td>Conservation of Wildlife and Forestry in other countries around the world</td>
</tr>
<tr>
<td>Day 35:</td>
<td>What are farmers in the United States doing to help with conservation efforts? How does this help forestry and wildlife?</td>
<td>Students will listen to local farmers about what they are doing to help conserve the soil, forestry, and wildlife in our community.</td>
<td>Letter to future self Questions for a Farmer</td>
</tr>
</tbody>
</table>
Day 31
Mrs. Katelyn Schultz
Title: What is wildlife? Time: 44 Minutes
Grade: 8th Grade Subject Area: Lab Science- Agriculture Education

Curriculum Standard(s)

| AFNR-BAS-12 | Apply principles of environmental science as it relates to agricultural production and sustainability |

Learning Objectives (Benchmark) and Assessment:

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
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<tbody>
<tr>
<td>1. Students will be able to define wildlife and give 4 examples of wildlife in the world.</td>
<td>1. Wildlife Webquest</td>
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</table>

Materials Needed:
Chromebook
Pencil
What is wildlife PowerPoint
Wildlife Webquest

Lesson Procedures:

<table>
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<tr>
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<th>Time</th>
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<td>1. Bell Work</td>
<td>4 Mins</td>
</tr>
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<td>a. What is wildlife?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td></td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td>15 Mins</td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. Wildlife PowerPoint</td>
<td></td>
</tr>
<tr>
<td>a. What is Wildlife?</td>
<td></td>
</tr>
<tr>
<td>i. Wildlife is considered any living things and especially mammals, birds, and fishes that are neither human nor domesticated.</td>
<td></td>
</tr>
<tr>
<td>b. List of Wildlife</td>
<td></td>
</tr>
<tr>
<td>i. Monkey</td>
<td></td>
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<tr>
<td>ii. Shark</td>
<td></td>
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<tr>
<td>iii. Gorilla</td>
<td></td>
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<tr>
<td>iv. Leopard</td>
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<td>v. Wolf</td>
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<td>vi. Antelope</td>
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<td>vii. Bald eagle</td>
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<td>viii. Panda</td>
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<td>ix. Walrus</td>
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<tr>
<td>x. Jellyfish</td>
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<tr>
<td>xi. Crab</td>
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<tr>
<td>xii. Giraffe</td>
<td></td>
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<tr>
<td>xiii. Woodpecker</td>
<td></td>
</tr>
<tr>
<td>xiv. Camel</td>
<td></td>
</tr>
</tbody>
</table>
xv. Starfish
xvi. Koala
xvii. Zebra
xviii. Alligator
xix. Owl
xx. Tiger
xxi. Bear
xxii. Blue whale
xxiii. Coyote
xxiv. Chimpanzee
xxv. Raccoon
xxvi. Lion
xxvii. Arctic wolf
xxviii. Crocodile
xxix. Dolphin
xxx. Elephant
xxx. Squirrel
xxxii. Snake
xxxiii. Kangaroo
xxxiv. Hippopotamus
xxxv. Elk
xxxvi. Rabbit
xxxvii. Fox
xxxviii. Gorilla
xxxix. Bat
xl. Hare
xli. Toad
xlii. Frog
xliii. Deer
xliv. Rat
xlv. Badger
xlvi. Lizard
xlvii. Mole
xlviii. Hedgehog
xlix. Otter
l. Reindeer
c. What is an Ecosystem?
i. the complex of a community of organisms and its environment functioning as an ecological unit
d. Wildlife Management
i. There are a variety of ways we can manage wildlife, ranging from a very hands-on approach to a very passive hands-off approach.
   1. Manipulative management - actively manipulating or changing a wildlife population size.
   2. Custodial management - protecting wildlife/habitat and minimizing human interaction
e. Manipulative Management
i. We act upon a population to change its numbers
ii. We can do this through direct means of population control or indirect means by altering food supply, habitat, density of predators, or prevalence of disease.

iii. A population is to be harvested (hunted/fished)

iv. A population slides to an unacceptably low density or increase to an unacceptably high.

v. Hunting/fishing for a sustainable yield and stable population

vi. Hunting/fishing to decrease population

vii. Species protection and predator control to allow a population to increase

viii. Artificial replenishment of animals (e.g. fish hatcheries)

f. Custodial Management

i. A way to protect a species by preventing problems or fixing existing problems. The goal is to minimize external influences on wildlife populations and habitat.

ii. Managing wildlife in a national park or similar setting where the park goals are to protect ecological processes (i.e. keeping the ecosystem as natural as possible, minimizing human impacts)

iii. The conservation of threatened/endangered species where the threat is external (over-hunting/fishing, invasive predators, habitat loss, etc.)

iv. Restore Wildlife Habitat

v. Protect Wildlife Habitat

4. Illinois Wildlife Webquest

   a. Use the following link https://www.wildlifeillinois.org/ to search for the answers to the following questions.

      i. Summarize the Basic Wildlife Management that the state of Illinois outlines?

      ii. Why doesn’t wildlife make a good pet?

      iii. How can you identify the wildlife in our area?

      iv. What tracks have you seen around northern Illinois?

      v. What scat have you seen around northern Illinois?

      vi. What are the spring seasonal behaviors that you could see? List all three.

      vii. What are the summer seasonal behaviors that you could see? List all three.

      viii. What are the fall seasonal behaviors that you could see? List all four.

      ix. What are the winter seasonal behaviors that you could see? List all three.

      x. List all the animal behaviors that you could see year round from the wildlife in Illinois.

      xi. Click on sightings → Then pick something that you think you may need help with in the future.

      xii. List the common backyard wildlife that can be found in Illinois.

      xiii. More than 440 species of birds can be found in Illinois, which ones have you seen?

      xiv. Where can the closet Wildlife Rehabilitator center be found in reference to Lena, IL?

5. Conclusion

   a. Turn in the webquest once you are finished.

   b. Tomorrow we will look at Forestry and what the meaning of that is and how it involves us.

References https://www.merriam-webster.com/dictionary/wildlife
What is Wildlife?

living things and especially mammals, birds, and fishes that are neither human nor domesticated

## Wild Life

<table>
<thead>
<tr>
<th>Animal</th>
<th>Animal</th>
<th>Animal</th>
<th>Animal</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Monkey</td>
<td>Jellyfish</td>
<td>Alligator</td>
<td>Lion</td>
<td>Hippopotamus</td>
<td>Frog</td>
</tr>
<tr>
<td>Shark</td>
<td>Crab</td>
<td>Owl</td>
<td>Arctic wolf</td>
<td>Elk</td>
<td>Deer</td>
</tr>
<tr>
<td>Gorilla</td>
<td>Giraffe</td>
<td>Tiger</td>
<td>Crocodile</td>
<td>Rabbit</td>
<td>Rat</td>
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<tr>
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<td>Woodpecker</td>
<td>Bear</td>
<td>Dolphin</td>
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<td>Kangaroo</td>
<td>Toad</td>
<td>Otter</td>
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<tr>
<td>Walrus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Reindeer</td>
</tr>
</tbody>
</table>

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**What is an Ecosystem?**

The complex of a community of organisms and its environment functioning as an ecological unit.

Wildlife Management

There are a variety of ways we can manage wildlife, ranging from a very hands on approach to a very passive hands-off approach.

Types of Wildlife Management

- **Manipulative** management - actively manipulating or changing a wildlife population size.
- **Custodial** management - protecting wildlife/habitat and minimizing human interaction
Manipulative Management

- We act upon a population to change its numbers
- We can do this through direct means of population control or indirect means by altering food supply, habitat, density of predators, or prevalence of disease.

When is manipulative management appropriate?

- A population is to be harvested (hunted/fished)
- A population slides to an unacceptably low density or increase to an unacceptably high.
Methods of Manipulative Management

- Hunting/fishing for a sustainable yield and stable population
- Hunting/fishing to decrease population
- Species protection and predator control to allow a population to increase
- Artificial replenishment of animals (e.g. fish hatcheries)

Custodial Management

- A way to protect a species by preventing problems or fixing existing problems. The goal is to minimize external influences on wildlife populations and habitat.
When is custodial management appropriate?

- Managing wildlife in a national park or similar setting where the park goals are to protect ecological processes (i.e. keeping the ecosystem as natural as possible, minimizing human impacts)
- The conservation of threatened/endangered species where the threat is external (over-hunting/fishing, invasive predators, habitat loss, etc)

Methods of Custodial Management

- Restore Wildlife Habitat
- Protect Wildlife Habitat
Let’s look at Wildlife and Wildlife Management in Illinois

https://www.wildlifeillinois.org/
Wildlife Webquest

Use the following link https://www.wildlifeillinois.org/ to search for the answers to the following questions.

Summarize the Basic Wildlife Management that the state of Illinois outlines?

________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

Why doesn't wildlife make a good pet?

________________________________________________________________________________
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How can you identify the wildlife in our area?

________________________________________________________________________________
________________________________________________________________________________
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________________________________________________________________________________
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What are the summer seasonal behaviors that you could see? List all three.

________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
What are the fall seasonal behaviors that you could see? List all four.

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

What are the winter seasonal behaviors that you could see? List all three.

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

List all the animal behaviors that you could see year round from the wildlife in Illinois.

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

Click on sightings → Then pick something that you think you may need help with in the future.

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

List the common backyard wildlife that can be found in Illinois.

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

More than 440 species of birds can be found in Illinois, which ones have you seen?

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

Where can the closest Wildlife Rehabilitator center be found in reference to Lena, IL?

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________
Title: What is forestry?

Grade: 8th Grade

Subject Area: Lab Science- Agriculture Education

Curriculum Standard(s)

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFNR-BAS-12</td>
<td>Apply principles of environmental science as it relates to agricultural production and sustainability</td>
</tr>
</tbody>
</table>

Learning Objectives (Benchmark) and Assessment:

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to define forestry and give an example of why it is important to agriculture.</td>
<td>1. Forestry Term Quiz</td>
</tr>
</tbody>
</table>

Materials Needed:

- Pencil
- Forestry PowerPoint
- Forestry Fill in the Blank Notes
- Forestry Quiz

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time, Large and Small Group Work</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bell Work</td>
<td>4 Mins</td>
</tr>
<tr>
<td>a. What is a forest?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td>18 Mins</td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. Forestry PowerPoint</td>
<td></td>
</tr>
<tr>
<td>a. What is Forestry?</td>
<td></td>
</tr>
<tr>
<td>i. the science of developing, caring for, or cultivating forests; the management of growing timber</td>
<td></td>
</tr>
<tr>
<td>b. Forestry Terms</td>
<td></td>
</tr>
<tr>
<td>i. Shrub</td>
<td></td>
</tr>
<tr>
<td>1. A shrub is a multi-stem plant.</td>
<td></td>
</tr>
<tr>
<td>ii. Hardwood</td>
<td></td>
</tr>
<tr>
<td>1. Hardwood is wood from deciduous trees.</td>
<td></td>
</tr>
<tr>
<td>iii. Seed-Tree</td>
<td></td>
</tr>
<tr>
<td>1. All but a few trees are cut in the seed-tree method of timber harvesting.</td>
<td></td>
</tr>
<tr>
<td>iv. Pulpwood</td>
<td></td>
</tr>
<tr>
<td>1. Paper production requires pulpwood trees.</td>
<td></td>
</tr>
<tr>
<td>v. Virgin Forest</td>
<td></td>
</tr>
<tr>
<td>1. Forests that have never been cut are virgin forests.</td>
<td></td>
</tr>
<tr>
<td>vi. Douglas Fir</td>
<td></td>
</tr>
</tbody>
</table>
1. The Douglas Fir is the most significant commercial tree species in the United States.

vii. Lumber
   1. The sawed boards from trees is lumber.

viii. Diameter Cutting
   1. The harvesting of every tree over a specific diameter is diameter cutting.

ix. Veneer
   1. Thin layers of wood are referred to as veneer.

x. Plywood
   1. Layers of wood glued together is plywood.

xi. Southern Region
   1. The forest region from Virginia to Florida and west to Texas is the Southern region.

xii. Hardness
   1. Hardness is one characteristic of wood.

xiii. Silviculture
   1. Silviculture is the scientific management of forests.

xiv. Clear Cutting
   1. Cutting every tree in an area is referred to as clear cutting.

xv. Oak Tree
   1. A type of hardwood is an oak tree.

xvi. Seasoning
   1. Seasoning is the air drying of wood.

xvii. Thinned
   1. In an even-aged stand of timber, trees should be thinned when they are 15 to 30-years-old.

xviii. Coniferous
   1. Coniferous trees produce softwood.

xix. Pine Group
   1. A tree with needle-like leaves is classified in the pine group.

xx. Eastern Region
   1. The forest region that includes the state of New York is the Eastern Region.

4. Trees in Illinois
   a. You will be given a name of a tree.
   b. Your job is to make an advertisement for the tree.
   c. We want you to tell us
      i. What the tree is useful for?
      ii. How do we identify it?
      iii. What is unique about it?
      iv. Where in the state do you find it? Where else are these trees found?
      v. How can we save the tree?

5. Conclusion
   a. Turn in the advertisement once you are finished.
   b. Great work today! I hope you enjoyed learning forestry terms today. Tomorrow we are going to look deeper into wildlife and forestry.

References
https://www.merriam-webster.com/dictionary/forestry
What is Forestry?

Mrs. Schultz

Forestry

the science of developing, caring for, or cultivating forests; the management of growing timber

https://www.merriam-webster.com/dictionary/forestry
Forestry Terms

Shrub

A shrub is a multi-stem plant.

https://frboriste.com/best-shrubs-for-colorado/
Hardwood

Hardwood is wood from deciduous trees.

http://geo.msu.edu/extra/geo118/maplehemlockbirch.html

Seed-tree

All but a few trees are cut in the seed-tree method of timber harvesting.

Pulpwood

Paper production requires pulpwood trees.

http://www.timbeter.com/pulpwood-measurement-methods-explained/

Virgin Forests

Forests that have never been cut are virgin forests.

https://www.americanforests.org/blog/discover-5-of-americas-old-growth-forests/
Douglas Fir

The Douglas Fir is the most significant commercial tree species in the United States.


Lumber

The sawed boards from trees is lumber.

http://www.concannonlumber.com/
Diameter Cutting

The harvesting of every tree over a specific diameter is diameter cutting.


Veneer

Thin layers of wood are referred to as veneer.

Plywood

Layers of wood glued together is plywood.

https://www.thespruce.com/what-is-marine-grade-plywood-2739672

Southern Region

The forest region from Virginia to Florida and west to Texas is the Southern region.

https://www.fs.usda.gov/arsfia
Hardness

Hardness is one characteristic of wood.

Silviculture

Silviculture is the scientific management of forests.


https://www.pinterest.com/pin/133771051406642007/
Clear Cutting

Cutting every tree in an area is referred to as clear cutting.

https://en.wikipedia.org/wiki/Clearcutting

Oak Tree

A type of hardwood is an oak tree.

https://www.ttnursery.net/oak-tree-for-sale-online/
Seasoning

Seasoning is the air drying of wood.

Thinned

In an even-aged stand of timber, trees should be thinned when they are 15 to 30-years-old.
Coniferous

Coniferous trees produce softwood.

Pine Group

A tree with needle-like leaves is classified in the pine group.

https://www.coniferousforest.com/plants-trees

https://rockycreekcandles.com/products/pine-needles
Eastern Region

The forest region that includes the state of New York is the Eastern Region.

http://www.society3rdid.org/eastern-region

What do we find in Illinois?

What the tree is useful for?

How do we identify it?

What is unique about it?

Where in the state do you find it?

Where else are these trees found?

How can we save the tree?
Forestry Notes

1. A _____________________________ is a multi-stem plant.

2. Hardwood is wood from ________________________________ trees.

3. All but a few trees are cut in the __________________________ method of timber harvesting.


5. Forests that have never been cut are __________________________ forests.

6. The ___________________________ ___________________________ is the most significant commercial tree species in the United States.

7. The sawed boards from trees is ________________________________.

8. The harvesting of every tree over a specific diameter is ________________________________

9. Thin layers of wood are referred to as ____________________________.

10. Layers of wood glued together is ________________________________.

11. The forest region from Virginia to Florida and west to Texas is the ______________________ region.

12. ____________________________ is one characteristic of wood.

13. ____________________________ is the scientific management of forests.

14. Cutting every tree in an area is referred to as ____________________________

15. A type of hardwood is an ________________________________ tree.

16. ____________________________ is the air drying of wood.

17. In an even-aged stand of timber, trees should be thinned when they are ____________ years old.

18. ________________________________ trees produce softwood.

19. A tree with ________________________________ leaves is classified in the pine group.

20. The forest region that includes the state of New York is the ______________________ Region
TREES OF ILLINOIS

What the tree is useful for?

How do we identify it?

What is unique about it?

Where in the state do you find it?

Where else are these trees found?

How can we save the tree?
Title: How does conservation come into effect when dealing with wildlife & forestry?  
Time: 44 Minutes
Grade: 8th Grade  
Subject Area: Lab Science- Agriculture Education

Curriculum Standard(s)

| AFNR-BAS-12 | Apply principles of environmental science as it relates to agricultural production and sustainability |

| Learning Objectives (Benchmark) and Assessment: |
|---|---|
| Learning Objective(s) | Assessment(s) |
| 1. Students will be able to find a conservation plan and explain what steps are being taken to protect wildlife and forests. | 1. Forestry Term Quiz |

Materials Needed:
- Pencil
- Coloring supplies
- White Paper
- A World Without Trees by Hannah Voak
- A World Without Wildlife by Ashley Sullivan
- Conservation Around the World Work Page
- Chromebook

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time, Large and Small Group Work</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bell Work</td>
<td></td>
</tr>
<tr>
<td>a. Are forestry and wildlife really that important?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td></td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
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</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. Draw a picture of the world and include the items we have been learning about for the past 2 days.</td>
<td></td>
</tr>
<tr>
<td>a. The hope is that the students will draw a picture with animals, trees, a building, or anything else that they feel is important to our world.</td>
<td></td>
</tr>
<tr>
<td>i. Ask the students to share their pictures with the class.</td>
<td></td>
</tr>
<tr>
<td>b. Ask the class what the repeating themes were in the pictures between theirs and their peers.</td>
<td></td>
</tr>
<tr>
<td>4. A World Without Trees</td>
<td></td>
</tr>
<tr>
<td>a. Pass out the World Without Trees by Hannah Voak</td>
<td></td>
</tr>
<tr>
<td>i. Read together as a class and discuss some of the consequences mentioned in the text.</td>
<td></td>
</tr>
<tr>
<td>5. A World Without Wildlife</td>
<td></td>
</tr>
<tr>
<td>a. Pass out the World Without Wildlife by Ashley Sullivan</td>
<td></td>
</tr>
<tr>
<td>i. Read together as a class and discuss some of the consequences mentioned in the text.</td>
<td></td>
</tr>
</tbody>
</table>
ii. Also, watch the video by Jane Goodall

6. Draw another picture
   a. This time you are going to draw another picture and eliminate that wildlife and forestry.
      i. How is your picture different than the first one that you drew?
      ii. What stayed the same?
      iii. Do you want to live in a world without trees and wildlife?
          1. Have students share their pictures with the class.

7. Conservation
   a. We talked about conservation a couple of weeks ago. How can we apply the overall theme of conservation to trees (forestry) and wildlife?
      i. Students will research the conservation actions that are going on around the world.
         1. Each group will be given a country around the world and they will look and see what is happening there to aid in this effort.
      ii. Students will share their findings with the class through a PowerPoint presentation.

8. Conclusion
   a. We will continue this work tomorrow. Make sure you are using credible sites and take your time to find what the question is asking you.
   b. Great work today!

References
https://www.scienceinschool.org/content/world-without-trees
https://news.janegoodall.org/2017/03/03/world-wildlife-day-a-world-without-wildlife-is-not-a-world-at-all/
A world without trees
Hannah Voak

Contemplating the consequences of a tree-free planet.

There are approximately 3.04 trillion trees on planet Earth (Crowther et al, 2015), covering 31% of the world's land surface\textsuperscript{1}. Today, for Earth Day, we're taking a look at trees.

Around 15 billion trees are cut down each year. So, hypothetically speaking, it would take just over 200 years for the world's forests to completely disappear. While this scenario is unlikely, what would be the consequences of a tree-free planet? Let's start with perhaps the most obvious difference – oxygen concentration.

A lack of oxygen?
Oxygen makes up roughly 21% of the Earth’s atmosphere, but you probably know that already. What you might be surprised to find out, however, is that only half of this oxygen is produced through photosynthesis in trees and other plants on land. The other half is produced in oceans, by microscopic marine organisms called phytoplankton. The environment would not be devoid of oxygen if all trees were lost but the oxygen level would be lower. Would it be sufficient for humans to survive? In one year, a mature leafy tree produces as much oxygen as ten people breathe. If phytoplankton provides us with half our required oxygen, at current population levels we could survive on Earth for at least 4000 years before the oxygen store ran empty. However, that’s not considering a number of other factors: increasing population size, for example, would reduce the amount of oxygen available, whilst phytoplankton blooms due to an abundance of carbon dioxide could increase oxygen levels.

Suffocating smog
Whilst there may be enough oxygen for humans to survive on Earth, at least to begin with, the air we breathe could still be responsible for our demise. Like giant filters, trees help to cut down on pollution levels. Leaves intercept airborne particles and ozone, carbon monoxide, sulfur dioxide and other greenhouse gases are absorbed through the leaves stomata. In 2012, outdoor air pollution was estimated to cause 3.7 million premature deaths worldwide\textsuperscript{2}. Imagine the impact removing these environmental sieves would have on humankind. Air-pollution masks would become a necessity and bottled ‘clean air’ could come at a premium.

Full of hot air?
Armed with pollution masks, would the climate and temperature still be suitable for us? One important consideration is carbon dioxide. In one year, an acre of mature trees soaks up the same amount of carbon dioxide that we produce by driving the average car 26 000 miles. Since human activities like this increase the normal level of carbon dioxide in the atmosphere, cutting down trees would tip the balance even further, not to mention the enormous amount of stored carbon that would be released from doing so.
Deforestation is already responsible for up to 15% of global greenhouse gas emissions and you might think that an overwhelming increase in carbon dioxide would result in a much warmer planet. However, the relationship between trees and global temperature is much more complicated.

Energy and water fluxes between trees and the atmosphere also play a role and a tree’s color, for example, can affect the amount of the Sun’s energy that is absorbed or reflected. Studies have shown that Europe’s trees have actually caused a slight increase in regional temperatures since 1750, while transpiration from plants in tropical forests cools the surface temperature. Therefore, whether the temperature becomes too hot to handle could depend on many factors, although a recent study concluded that reducing forest size increases average air surface temperatures in all climate zones (Alkama & Cescatti, 2016).

Rain check
If you often get caught in the rain without an umbrella this next consequence may seem appealing at first: removing trees might reduce rainfall. Lands would quickly dry out as less moisture is returned to the atmosphere, a crucial role of trees in the water cycle. A study in 2012, for example, found that by 2050 destruction of tropical rainforests would reduce rain across the Amazon basin by up to 21% in the dry season (Spracklen et al, 2012). It could also drive significant and widespread shifts in rainfall distribution, affecting agriculture locally and further afield. Without trees, we would not only live in a world of widespread drought, but we would likely be exposed to more frequent extreme weather events such as flooding when it does rain. In which case, our natural, resilient safety buffer would not be there to lessen the blow.

Substandard soil
Without trees and roots to hold the soil together, erosion would quickly occur and heavy rains would easily wash soil away. The soil would also be full of dangerous chemicals and pollutants that are normally filtered by trees, so attempting to grow anything on Earth would prove difficult. Plants are the foundation of all food chains. Without trees, there would be no paper, no pencils, even no coffee or tea, but more fundamentally there would also be no food for animals, or us, to eat. And since 70% of the Earth’s land animals and plants live in forests, the majority would lose their habitat.

The prospect of a world without trees looks very grey (and much less green). Even if we survived on dirty air, endured catastrophic climatic events and found a way to sustain ourselves, would it be a world in which you wanted to live? What other theories do you have about what a tree-free planet would be like? Tell us in the comments section; we’d love to hear your ideas!

And, if this article has got you thinking about the value of trees, you can help the Earth Day Network reach its goal of planting 7.8 billion trees over the next 5 years.
WORLD WILDLIFE DAY:  
A WORLD WITHOUT WILDLIFE, IS NOT A WORLD AT ALL  
BY ASHLEY SULLIVAN ON MARCH 3, 2017 CONSERVATION, SERIOUSLY GOOD FOR ALL

What would the world absent of wildlife look like? We might think of a morning without the chiming song of birds, an ocean without whales spouting blasts of seawater beside ships, or a forest without the heart-stopping calls of chimpanzees. This is a world we cannot imagine because it is one we should not imagine. Today, on World Wildlife Day, we stand up together to make sure this incomprehensible possibility of the horrific loss of plants and animals is prevented entirely. From butterflies to bears, from turtles to Tasmanian devils; All living things deserve to live and stay wild.

On March 3rd, the United Nations declared a day to raise awareness for the delicate situations pertaining to the protection of our global heritage of wildlife. It is one day we celebrate – though the call to act on behalf of our natural world of animals and plants is more urgent than ever, and must be carried throughout the year. For not only will a world devoid of wildlife be an unbearable one, but it will also be one that causes the collapse of all living things and the millions of ecosystems of which we are a part and rely on as fellow animals and human beings. This we cannot allow.

Dr. Goodall and JGI have a message for everyone to encourage our persistence in this fight:  
https://youtu.be/vSIWs4x0Qgk

Dr. Goodall and JGI have always realized the potential and magnificence of youth when they are listened to and supported in starting something of their own. Nearly one-quarter of the world’s population is between 10 and 24, and as they become the leaders and thinkers of tomorrow, we must give them the space to envision the world they want and evaluate the best ways to create that future. Through our Girl’s Scholarships and gender and health initiatives, we are focusing on ways to improve the lives of young people by providing the tools and resources to self-start and live in harmony with wildlife in key conservation sites. Most essentially, we have been growing and evolving Jane Goodall’s Roots & Shoots, a youth lead program which invigorates young people from nearly 100 countries to examine the problems in their communities on a local and global scale, and to build projects to make a tangible difference for people, animals, and the environment. With these voices, ours, and your own, we will develop the best ways forward to protect our world, and all of its precious wildlife.

We Can Make a Difference

100 years ago, there were over one million chimpanzees in their range in Africa. Today, there are only 340,000 in the entire world. Other species are faltering as well, like the mountain gorilla which is teetering on the edge with a population of only 880 individuals (WWF). The California Condor, North America’s largest land bird, was extinct in the wild until their reintroduction in 1992, and today, their numbers are only in the 200s (Defenders). Stories like these are the unfortunate norm, due to poaching, agricultural land use and removal of habitat, climate change, and a barrage of other factors. What is also the norm, thankfully, is our efforts to save global wildlife. Below are a list of our
top 15 stories from Dr. Goodall and JGI about people turning these numbers around, and ways to remain hopeful in the endeavor to protect wildlife.

Pangolins – A Lucky Day: World Pangolin Day
Puerto Rican Parrots – The Puerto Rican Parrot: Rescued from Extinction
Elephants – The Ivory Game & China’s New Year Commitment to End the Ivory Trade
Lions – The First Time I Saw a Lion
Frogs – World Frog Day: A Story About Saving One of the World’s Rarest
Primates – The Hope for Primate Conservation
Pandas – IUCN Congress: Giant Pandas are Conservation Symbol of Success
Forests – JGI’s One Good Story: Engineering a Forest
Oceans – We Live on a Water World, and We Must Protect it
Wolves – Mexican Grey Wolves: The Endangered Wolf You’ve Never Heard Of
Rhinos – The Truth About the Fate of Rhinos: The Blood Rhino Blacklist
Turtles – Sea Turtles Find Their Way Home Thanks to Mady
Orangutans – Humans of the Forest, Losing Their Forest
Grizzly Bears – Grizzly Bears Still Need to be Protected
Chimpanzees – Rescued Chimps Find a Forest Home Together at Last
Conservation Around the World

Country: ________________________________

1. What is being done to protect the forestry in their country?

2. What is being done to protect the wildlife in their country?

3. What wildlife species are endangered in this country?

4. Have they joined with any other countries to make advancements in protecting the forestry industry or wildlife?

5. Is the United States helping in the conservation of these natural resources?

6. Statistics about the forestry and wildlife industry of your country.

7. What else do you have to add?
Title: How do countries around the world conserve forestry and wildlife?  
Time: 44 Minutes

Learning Objectives (Benchmark) and Assessment:

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to research the conservation actions around the world and present them to their peers.</td>
<td>1. Conservation of Wildlife and Forestry in other countries around the world</td>
</tr>
</tbody>
</table>

Materials Needed:

- Pencil
- Chromecast to TV for Presenting
- Conservation Around the World Work Page
- Conservation Around the World Presentation Rubric
- Chromebook

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time, Large and Small Group Work</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bell Work</td>
<td></td>
</tr>
<tr>
<td>a. What country are you researching about?</td>
<td>4 Mins</td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td>10 Mins</td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>3. Conservation</td>
<td></td>
</tr>
<tr>
<td>a. Yesterday, we talked about conservation as a follow up to what we did a couple of weeks ago. How can we apply the overall theme of conservation to trees (forestry) and wildlife?</td>
<td>30 Mins</td>
</tr>
<tr>
<td>i. Students will continue researching the conservation actions that are going on around the world.</td>
<td></td>
</tr>
<tr>
<td>1. Each group will be given a country around the world and they will look and see what is happening there to aid in this effort.</td>
<td></td>
</tr>
<tr>
<td>ii. Students will share their findings with the class through a PowerPoint presentation.</td>
<td></td>
</tr>
<tr>
<td>4. Presentations</td>
<td></td>
</tr>
<tr>
<td>a. Students will present their PowerPoint to the class.</td>
<td></td>
</tr>
<tr>
<td>b. Students will need to remember their presenting skills.</td>
<td></td>
</tr>
<tr>
<td>c. Students must not read from the PowerPoint but, they can use a notecard as a guide.</td>
<td></td>
</tr>
<tr>
<td>d. Students will be graded based on a rubric.</td>
<td></td>
</tr>
<tr>
<td>i. See attachment</td>
<td></td>
</tr>
</tbody>
</table>
5. Conclusion
   a. Great work today, tomorrow we will look at the efforts that farmers are taking to conserve our world and why they are leading this movement in the United States.
<table>
<thead>
<tr>
<th></th>
<th>4 (20 Points)</th>
<th>3 (18 Points)</th>
<th>2 (16 Points)</th>
<th>1 (14 Points)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Communication Skills</strong></td>
<td>Speaks clearly and loudly. Facial expressions and body language generate a strong interest and enthusiasm about the topic in others.</td>
<td>Speaks clearly and loudly. Facial expressions and body language sometimes generate a strong interest and enthusiasm about the topic in others.</td>
<td>Needs to speak louder. Facial expressions and body language are used to try to generate enthusiasm.</td>
<td>Needs to speak louder. Very little use of facial expressions or body language. Did not generate much interest in the topic being presented.</td>
</tr>
<tr>
<td><strong>Preparedness</strong></td>
<td>The student is completely prepared and has obviously rehearsed. Group practiced 2 or more times with a teacher. I was able to answer at least 75% of the questions asked of me.</td>
<td>The student seems pretty prepared but might have needed a couple more rehearsals. Group practiced 1 or more times with a teacher. I was able to answer at least 50% of the questions asked of me.</td>
<td>The student is somewhat prepared, but it is clear that rehearsal was lacking. Group did not practice. I was able to answer at least 25% of the questions asked of me.</td>
<td>The student does not seem at all prepared to present. Group did not practice. I was able to answer only 10% of the questions asked of me.</td>
</tr>
<tr>
<td><strong>Posture and Eye Contact</strong></td>
<td>Stands up straight, looks relaxed and confident. Establishes eye contact with everyone in the room during the presentation.</td>
<td>Stands up straight and establishes eye contact with everyone in the room during the presentation.</td>
<td>Sometimes stands up straight and establishes eye contact.</td>
<td>Slouches and/or does not look at people during the presentation.</td>
</tr>
<tr>
<td><strong>Product</strong></td>
<td>The product shows considerable work/creativity which adds to the presentation.</td>
<td>The product is clearly explained and connected to the presentation.</td>
<td>The product is not clearly explained or connected to the presentation.</td>
<td>The student has no product OR the product detracts from the presentation.</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td>The student shows extensive knowledge of the content. Students presented an equal disbursement of time.</td>
<td>Student shows sufficient knowledge of the content. Students presented less than the disbursed amount of time.</td>
<td>The student has limited knowledge of the content. Students presented less than half of the disbursed amount of time.</td>
<td>Student lacks key information related to the content. Students presented less than one-quarter of the disbursed amount of time.</td>
</tr>
</tbody>
</table>
Curriculum Standard(s)

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFNR-BAS-12</td>
<td>Apply principles of environmental science as it relates to agricultural production and sustainability</td>
</tr>
</tbody>
</table>

Learning Objectives (Benchmark) and Assessment:

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will listen to local farmers about what they are doing to help conserve the soil, forestry, and wildlife in our community.</td>
<td>1. Letter to future self</td>
</tr>
<tr>
<td></td>
<td>2. Questions for a Farmer</td>
</tr>
</tbody>
</table>

Materials Needed:
- Pencil
- Questions for the Farmers Sheet
- Letter to Future Self Outline

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time, Large and Small Group Work</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bell Work</td>
<td></td>
</tr>
<tr>
<td>a. What are farmers doing to aid in the conservation efforts in Stephenson County?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td>4 Mins</td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td></td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. Guest Speakers</td>
<td></td>
</tr>
<tr>
<td>a. Stephenson County Soil and Water Conservation District</td>
<td></td>
</tr>
<tr>
<td>i. Seth Wenzel will come in to talk to the students about the Soil and Water Conservation District.</td>
<td></td>
</tr>
<tr>
<td>1. He will cover the programs offered to farmers and how this impacts Stephenson County.</td>
<td></td>
</tr>
<tr>
<td>2. He will also talk about the Natural Resources Conservation Resources (NRCS) Conservation Stewardship Program</td>
<td></td>
</tr>
<tr>
<td>3. He will talk about how these efforts have helped in the area and the impact they see in the future.</td>
<td></td>
</tr>
<tr>
<td>b. Lorilee Schultz - Local Dairy Farmer</td>
<td></td>
</tr>
<tr>
<td>i. Lorilee Schultz is a local dairy farmer who received trees from the Soil and Water Conservation District and got paid through Natural Resources Conservation Resources (NRCS) Conservation Stewardship Program for adding trees to her dairy farm.</td>
<td>15 Mins</td>
</tr>
<tr>
<td>ii. She will also talk about the impacts and challenges she faces as a dairy farmer in our county.</td>
<td>15 Mins</td>
</tr>
</tbody>
</table>
iii. She will talk about trees and show pictures of her efforts to grow them on her farm and why certain places in Stephenson County are ideal for growing trees and other conservation projects.

4. Questions
   a. What questions do you have as either of our speakers?
      i. Allow students to ask questions

5. Letter to your future self
   a. Write a letter to your future self. What do you hope you do in your lifetime to be a conservationist?
   b. How will you leave the world for future generations?
   c. What else do you want to tell yourself?
   d. Finish this for homework and bring it back on Monday.

6. Conclusion
   a. Thank you, Seth and Lorilee for coming in to talk to us about protecting our Earth locally.
   b. If you didn’t get your questions answered, go home and research them.
   c. Finish your letter as well and turn it in on Monday. Feel free to type it and share it with me if you don’t want to hand write it.
3 Questions I had while listening to local farmers

1. Question:

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

a. Answer:

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

2. Question:

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

a. Answer:

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

3. Question:

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

a. Answer:

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________
Write a letter to your future self: What do you think the world will be like? What is something that you will need to remember in the future about farming and this class?
<table>
<thead>
<tr>
<th>Day</th>
<th>Essential Question</th>
<th>Objective</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 36:</td>
<td>What is the difference between a job and a career?</td>
<td>Students will be able to explain the difference between a job and a career.</td>
<td>Career Plan Job vs. Career</td>
</tr>
<tr>
<td>Day 37:</td>
<td>What are the different areas in which you can have a career in the Agriculture Industry?</td>
<td>Students will be able to identify the career clusters within the Agriculture Industry.</td>
<td>Career Plan Agriculture Clusters Page 1</td>
</tr>
<tr>
<td>Day 38:</td>
<td>What is an Agricultural job that interests you and what are the responsibilities of that job?</td>
<td>Students will be able to identify and describe a career in an agricultural or agriculturally related occupation.</td>
<td>Career Plan - Outline</td>
</tr>
<tr>
<td>Day 39:</td>
<td>What skills would a good agricultural employee have?</td>
<td>Students will be able to define what makes a good employee and state 3 skills in which someone needs to be employed.</td>
<td>Career Plan Resume</td>
</tr>
<tr>
<td>Day 40:</td>
<td>How will you become part of the Agricultural Industries workforce?</td>
<td>Students will be able to ask 3 questions to a guest speaker that will come in and talk about their business and the role it plays in the Agricultural Industry.</td>
<td>Career Plan Employable skills</td>
</tr>
</tbody>
</table>
Day 36

Mrs. Katelyn Schultz

Title: What is the difference between a job and a career?

Grade: 8th Grade

Subject Area: Lab Science - Agriculture Education

Time: 44 Minutes

Curriculum Standard(s)

| AFNR-BAS-1 | Demonstrate employability skills required by business and industry |
| AFNR-BAS-3 | Explore, develop, and implement the Supervised Agricultural Experience (SAE) program by researching careers in agriculture and agribusiness |
| AFNR-BAS-9 | Define major components of the animal industry and outline the development of the resulting products, services, and careers |

Learning Objectives (Benchmark) and Assessment:

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to explain the difference between a job and a career.</td>
<td>1. Career Plan</td>
</tr>
</tbody>
</table>

Materials Needed:

- Pencil
- Job vs. Career Cards
- Job vs. Career Around the Classroom
- Job vs. Career Worksheet for Students

Lesson Procedures:

<p>| Instructional Strategy: Individual Work Time, Large and Small Group Work |</p>
<table>
<thead>
<tr>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bell Work</td>
</tr>
<tr>
<td>a. Is a job different than a career?</td>
</tr>
<tr>
<td>i. Answers will vary</td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
</tr>
<tr>
<td>3. Explain the difference between job and career</td>
</tr>
<tr>
<td>a. What is the difference between a job and a career?</td>
</tr>
<tr>
<td>i. You have been given a card. Your card has either a career or a job printed on it.</td>
</tr>
<tr>
<td>1. I will give you 30 seconds to pace your card under the correct title.</td>
</tr>
<tr>
<td>a. Ready GO!</td>
</tr>
<tr>
<td>ii. Talk with your elbow partner about why you placed your card where you did.</td>
</tr>
<tr>
<td>1. Now share one or two things that your partner said out loud to the class.</td>
</tr>
<tr>
<td>iii. After discussing, are there any cards that you would move to the other side? Why?</td>
</tr>
<tr>
<td>4. Let’s talk about the difference between a job and a career!</td>
</tr>
<tr>
<td>a. Let’s look at the chart that is now in front of you.</td>
</tr>
</tbody>
</table>
i. Take a second to read over the chart and think about what should be in each of the boxes.
   1. Leave them blank until we decide as a group what to put in each of the boxes.

ii. We are going to go on a scavenger hunt to fill in the chart.
   1. There are papers hung around the room.
      a. I will give you ten minutes to locate each of the posters, read them completely, and record the answers on our activity sheets.
      b. Be prepared to discuss your answers with the rest of the class.

iii. Now that each of us has the information completed on our charts, let’s take a minute to make sure we all agree on the answers.
   b. What is your definition of a job?
      i. Answers will vary
   c. What is your definition of a career?
      i. Answers will vary

5. Let’s begin to think about your future –
   a. Will you have a job or a career?
   b. What will you be doing?
      i. Fill this out on your sheet

6. Conclusion
   a. Complete the rest of the questions.
   b. I challenge you to go home and ask your parents, grandparents, aunt, uncles, or anyone that isn’t in high school if they consider their work a job or career and bring it back to us tomorrow.

References
https://ffa.app.box.com/s/2s3w6e7ft0ez8oyfc36gfpk20ifpzmen/file/301247158990
# Job vs. Career

<table>
<thead>
<tr>
<th>Job</th>
<th>Career</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mow Neighbor’s Lawn</td>
<td>Landscaper</td>
</tr>
<tr>
<td>A cashier at McDonald’s on Weekends</td>
<td>Fast Food Restaurant Manager</td>
</tr>
<tr>
<td>Custodian</td>
<td>Teacher</td>
</tr>
<tr>
<td>Farmer</td>
<td>Car Salesman</td>
</tr>
<tr>
<td>Babysitter</td>
<td>Day Care Provider</td>
</tr>
<tr>
<td>Waiter</td>
<td>Cook</td>
</tr>
<tr>
<td>Agriculture Engineer</td>
<td>Pharmacist</td>
</tr>
<tr>
<td>Work for Neighboring Farms on Weekends</td>
<td>Rancher</td>
</tr>
<tr>
<td>Salesperson</td>
<td>Florist</td>
</tr>
<tr>
<td>Grain Gradder</td>
<td>Dentist</td>
</tr>
<tr>
<td>Veterinarian</td>
<td>Vet Tech</td>
</tr>
<tr>
<td>Teachers Aid</td>
<td>Loan Officer</td>
</tr>
<tr>
<td>Receptionist</td>
<td>Own a Fertilizer Company</td>
</tr>
<tr>
<td>--------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>A Pilot for a Fertilizer Company</td>
<td>Dentist</td>
</tr>
<tr>
<td>Part Time at Wal-Mart</td>
<td>Cleaning Houses</td>
</tr>
</tbody>
</table>
A **JOB** is considered short term. For example, we might be willing to be a cashier on weekends while we are completing an unpaid internship to be a vet tech.

A **CAREER** is considered long term. For example, we may work numerous jobs – babysitting, mowing lawns, cashiering, and driving a tractor for the neighbor on our way to becoming an agricultural engineer.
Training

A **JOB** may or may not require training. Some training may be required.

For example, if we are going to babysit for the neighbors they probably want to know if we are trained or have experience in taking care of children.

A **CAREER** usually requires special training or education.

For example, let’s say you decide to turn your babysitting into a daycare with employees, education, and many children. At this point, you will likely be required to pass state inspections, get a license that says you are an authorized provider and market your daycare to the community we want to serve.
Money

A **JOB** salary range may change drastically with age and experience and the task you are completing. The range will likely include minimum wage to high wage earners working short term with little to no chance of making it into a career.

A **CAREER** salary range will vary drastically also but will likely not start at the minimum wage end of the pay scale unless it is an entry-level position. It will likely have opportunities to increase wages, responsibilities, and change.
Dictionary Definition

**Job**:  
1. a piece of work, esp. a specific task done as part of the routine of one’s occupation or for an agreed price: She gave him the job of mowing the lawn.  
2. a post of employment; full-time or part-time position: She was seeking a job as an editor.  
3. anything a person is expected or obliged to do; duty; responsibility: It is your job to be on time.  

Synonyms: 1. See task. 2. See position
Dictionary Definition

**Career:**
1. an occupation or profession, esp. one requiring special training, followed as one’s lifework: He sought a career as a lawyer.
2. a person’s progress or general course of action through life or through a phase of life, as in some profession or undertaking: His career as a soldier ended with the armistice.
3. success in a profession, occupation, etc.

Synonyms: 2. vocation, calling, work, lifework, livelihood.
JOB vs. CAREER

Directions: Travel around the room and fill in the information in the spaces below.

<table>
<thead>
<tr>
<th>JOB</th>
<th>CAREER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time/Duration</td>
<td></td>
</tr>
<tr>
<td>Full/Part-Time</td>
<td></td>
</tr>
<tr>
<td>Training</td>
<td></td>
</tr>
<tr>
<td>Salary Range</td>
<td></td>
</tr>
</tbody>
</table>

What is the dictionary definition of a job?
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

What are some other words (synonyms) that can be used in place of the word job?
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

What is YOUR definition of a job?
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

What is the dictionary definition of a career?
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

What are some other words (synonyms) that can be used in place of the word career?
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

What is YOUR definition of a career?
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
What are the similarities among a job and a career?
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

What are the differences between a job and career?
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

Will you have a job or a career?
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

What will your job or career be? What might you have in high school?
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

What are careers in Agriculture? What are jobs in Agriculture?
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
Day 37

Title: What are the different areas in which you can have a career in Agriculture? 

Grade: 8th Grade 

Subject Area: Lab Science- Agriculture Education

Curriculum Standard(s)

<table>
<thead>
<tr>
<th>Curriculum Standard(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFNR-BAS-1</td>
<td>Demonstrate employability skills required by business and industry</td>
</tr>
<tr>
<td>AFNR-BAS-3</td>
<td>Explore, develop, and implement the Supervised Agricultural Experience (SAE) program by researching careers in agriculture and agribusiness</td>
</tr>
<tr>
<td>AFNR-BAS-9</td>
<td>Define major components of the animal industry and outline the development of the resulting products, services, and careers</td>
</tr>
</tbody>
</table>

Learning Objectives (Benchmark) and Assessment:

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to identify the career clusters within the Agriculture Industry.</td>
<td>1. Career Plan - Agriculture Clusters</td>
</tr>
</tbody>
</table>

Materials Needed:

- Pencil
- Career Cluster Page for Students
- Career Research Outline Page 1

Lesson Procedures:

<table>
<thead>
<tr>
<th>Time</th>
<th>Instructional Strategy: Individual Work Time, Large and Small Group Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Mins</td>
<td>1. Bell Work</td>
</tr>
<tr>
<td></td>
<td>a. What are careers in Agriculture?</td>
</tr>
<tr>
<td></td>
<td>i. Answers will vary</td>
</tr>
<tr>
<td>15 Mins</td>
<td>2. Greet the students and give directions on bell work.</td>
</tr>
<tr>
<td></td>
<td>a. Tell the class, “Good Morning”</td>
</tr>
<tr>
<td></td>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
</tr>
<tr>
<td></td>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
</tr>
<tr>
<td></td>
<td>1. At this time, the teacher will take attendance.</td>
</tr>
<tr>
<td></td>
<td>3. What are the eight career pathways and associated careers?</td>
</tr>
<tr>
<td></td>
<td>a. The eight pathways</td>
</tr>
<tr>
<td></td>
<td>i. Animal System Careers</td>
</tr>
<tr>
<td></td>
<td>ii. Biotechnology Careers</td>
</tr>
<tr>
<td></td>
<td>iii. Environmental Careers</td>
</tr>
<tr>
<td></td>
<td>iv. Food Processing Careers</td>
</tr>
<tr>
<td></td>
<td>v. Natural Resources Careers</td>
</tr>
<tr>
<td></td>
<td>vi. Plant System Careers</td>
</tr>
<tr>
<td></td>
<td>vii. Power, Structural, and Technical System Careers</td>
</tr>
<tr>
<td></td>
<td>viii. Agribusiness Careers</td>
</tr>
<tr>
<td></td>
<td>b. You and a partner will be given one of the pathways to research the types of careers.</td>
</tr>
<tr>
<td></td>
<td>i. DO NOT just google careers in Animal Systems, etc.</td>
</tr>
<tr>
<td></td>
<td>c. Make a list of as many as you can. The group that comes up with the most will get a prize.</td>
</tr>
</tbody>
</table>
i. Write your list on a google doc and then star at least 5 that are found in Stephenson County.

ii. You are doing to have to think back to week 2 of this class when we talked about agriculture in Stephenson County.
   1. Circle the 2 jobs that interest you most
   2. Put a square around the 2 clusters that interest you the most.

4. What career cluster interests you the most?
   a. Now we are going to work in the clusters.
      i. I need all those interested in the cluster to sit together.
         1. Have the table or desks in groups so students can work together.
         2. Only allow five students in a group. It is okay to have a cluster that no one is in.
   b. As a group, you are going to research the career. What they do, what type of degree the jobs require.
      i. You will also have to…
         1. Identify high school classes that will help me reach my goal
         2. Identify colleges that offer the degree types you are seeking

5. Outline – Career Research Assignment
   a. Back at the beginning of the quarter, we took some career inventories.
   b. You got the Outline – Career Research Assignment
      i. I told you to hold on to it because we would be coming back to it. Now is the time to pull this back out and if you lost it, I have extras. (See Day 38 Resources in case you don’t get to this assignment).
   c. We are just going to focus on the first page and you will be work on this for the next couple of days.

6. Conclusion
   a. We will be spending the next couple of days looking at your career plan and ways that you can become a viable employee.
   b. Continue to get page one completed and come back tomorrow ready to work on the next step

References
https://ffa.app.box.com/s/2s3w6e7ft0ez8oyfc36gfpk20ifpzmen/file/301247278171
https://ffa.app.box.com/s/r44ww2lx4nkjk7h3bxgjp5lfeyz27un8/file/301257178895
https://ffa.app.box.com/s/r44ww2lx4nkjk7h3bxgjp5lfeyz27un8/file/301246976911
The 8 Agricultural Clusters and some Jobs
Write your list on a google doc and then star at least 5 that are found in Stephenson County. Circle the 2 jobs that interest you most. Put a square around the 2 clusters that interest you the most.

i. Animal System Careers
   1. Veterinarian
   2. Dairy Producer
   3. Meat Scientist
   4. Animal Welfare Specialist
   5. Animal Care Specialist
   6. Animal Sales
   7. Artificial Insemination Technician
   8. Companion Animal Breeder
   9. Companion Animal Nutrition Specialist/Therapist
   10. Embryo Transfer Technician
   11. Meat Inspector
   12. Livestock Herdsman
   13. Zoo Animal Specialist
   14. USDA Scientist
   15. Equine Breeder
   16. Poultry Producer
   17. Meat Processor
   18. and many, many more.

ii. Biotechnology Careers
   1. Biotechnology Patent Agent
   2. Biotechnology Regulatory Affairs Specialist
   3. Agricultural Scientist
   4. Biotechnology Product Development Engineer
   5. Biotechnology Quality Control Engineer
   6. Biotechnology Research Assistant
   7. Biotechnology Research Associate
   8. Biotechnology Technician
   9. Biotechnology Assay Analyst
   10. Biotechnology Documentation Specialist
   11. Biotechnology Glass Washer
   12. Biotechnology Laboratory Assistant
   13. Biotechnology Library Assistant
   14. Biotechnology Manufacturing Technician
   15. Biotechnology Media Prep Technician
   16. Biotechnology Patent
25. Administrator  
26. Biotechnology Technical Recruiter  
27. Biotechnology Validation  
28. Engineer  
29. Biotechnology Validation  
30. Technician  
31. Food Inspector  
32. Lab Technician  
33. Molecular Biologist  
34. Poultry Scientist  
35. Agricultural Research Engineer  

iii. Environmental Careers  
1. Environmental Conservationist  
2. Environmental Scientist  
3. Environmental Educator  
4. Soil Conservationist  
5. Water Resources Manager  

iv. Food Processing Careers  
1. Agricultural Sales  
2. Agricultural Communications Specialists  
3. Agricultural Educators  
4. Food Scientists  
5. Meat Processors/Toxicologists  
6. Biochemists  
7. Nutritionists  
8. Dietitians  
9. Food Brokers  
10. Food Inspectors  
11. Food Scientists  
12. Meat Cutters  
13. Meat Graders  
14. Meat Science Researchers  
15. Food Meal Supervisors  
16. Cheese Makers  
17. Microbiologists  
18. Produce Buyers  
19. Bacteriologists  
20. Food & Drug Inspectors  
21. Bioengineers  
22. Biochemists  
23. Food & Fiber Engineers  
24. Food Processors  
25. Storage Supervisors  
26. Fieldsman  
27. Quality Control Specialists  

v. Natural Resources Careers  
1. Cartographer  
2. Wildlife Manager  
3. Log Grader  
4. Range Technician
5. Commercial Fisherman

vi. Plant System Careers
1. Gene splicing a corn plant for the desired trait
2. Identifying soil horizons
3. Teaching students about plants
4. Feeding/caring for fish
5. Farmer purchasing seed from a seed salesman
6. Repairing an injured tree
7. Teaching adults about agriculture
8. Trading commodities/agriculture products
9. Caring for a golf course
10. Greenhouse manager showing plants to customers

vii. Power, Structural, and Technical System Careers
1. Agricultural Engineer
2. Diesel Mechanic
3. Waste Water Treatment Plant Operator
4. Equipment/Parts Manager
5. Agricultural Software Developer
6. Computer Service Support Technician
7. Global Positioning Satellite Technician
8. Machinery Operator
9. Agricultural Electrician
10. Database Administrator
11. Computer Programmer
12. Agricultural Construction/Contractor
13. Spray Business Utilizing GPS
14. Welder
15. Concrete Specialist

viii. Agribusiness Careers
1. Livestock Seller
2. Animal Health Products Distributor
3. Agricultural Products Buyer
4. Dairy Herd Supervisor (DHIA)
5. Livestock Rancher/Breeder
6. Farm Manager
7. Farmer/Rancher/Feedlot Operator
8. Agricultural Economist
9. Agricultural Commodity Broker
10. Farm Investment Manager
11. Agricultural Educator
12. Banker/Loan Officer
13. Sales Manager
14. Salesperson
The 8 Agricultural Clusters and some Jobs
Write your list on a google doc and then star at least 5 that are found in Stephenson County. Circle the 2 jobs that interest you most. Put a square around the 2 clusters that interest you the most.

i. Animal System Careers
   1. 
   2. 
   3. 
   4. 
   5. 

ii. Biotechnology Careers
    1. 
    2. 
    3. 
    4. 
    5. 

iii. Environmental Careers
     1. 
     2. 
     3. 
     4. 
     5. 

iv. Food Processing Careers
    1. 
    2. 
    3. 
    4. 
    5. 

v. Natural Resources Careers
    1. 
    2. 
    3. 
    4. 
    5.
vi. Plant System Careers
   1.
   2.
   3.
   4.
   5.

vii. Power, Structural, and Technical System Careers
    1.
    2.
    3.
    4.
    5.

viii. Agribusiness Careers
     1.
     2.
     3.
     4.
     5.
Title: What is an Agricultural job that interests you & that what are the responsibilities?
Time: 44 Minutes Grade: 8th Grade Subject Area: Lab Science- Agriculture Education

Curriculum Standard(s)

<table>
<thead>
<tr>
<th>Curriculum Standard(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFNR-BAS-1</td>
<td>Demonstrate employability skills required by business and industry</td>
</tr>
<tr>
<td>AFNR-BAS-3</td>
<td>Explore, develop, and implement the Supervised Agricultural Experience (SAE) program by researching careers in agriculture and agribusiness</td>
</tr>
<tr>
<td>AFNR-BAS-9</td>
<td>Define major components of the animal industry and outline the development of the resulting products, services, and careers</td>
</tr>
</tbody>
</table>

Learning Objectives (Benchmark) and Assessment:

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to identify and describe a career in an agricultural or agriculturally related occupation.</td>
<td>1. Career Plan - Outline</td>
</tr>
</tbody>
</table>

Materials Needed:

- Pencil
- Outline – Career Research Assignment
- Outline – Career Research Assignment Rubric

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time, Large and Small Group Work</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bell Work</td>
<td>4 Mins</td>
</tr>
<tr>
<td>a. What career are available in Agriculture?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td></td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. Outline – Career Research Assignment</td>
<td>15 Mins</td>
</tr>
<tr>
<td>a. Let’s recap from yesterday</td>
<td></td>
</tr>
<tr>
<td>i. Back at the beginning of the quarter, we took some career inventories.</td>
<td></td>
</tr>
<tr>
<td>1. You got the Outline – Career Research Assignment</td>
<td></td>
</tr>
<tr>
<td>a. I told you to hold on to it because we would be coming back to it.</td>
<td></td>
</tr>
<tr>
<td>ii. Now is the time to pull this back out and if you lost it, I have extras.</td>
<td></td>
</tr>
<tr>
<td>b. Today is purely a workday and students will work on the packet and focus on their career.</td>
<td></td>
</tr>
<tr>
<td>i. The teacher should be walking around and monitoring student progress or conducting a conference with each student to make sure they are on the correct path.</td>
<td></td>
</tr>
<tr>
<td>ii. Students could have a difficult time thinking about their future or career. It is really important that as the teacher you push them to look at their future.</td>
<td></td>
</tr>
</tbody>
</table>
c. Allow students some time to work with their cluster group. This is for them to talk about careers and talk about ideas.
   i. These should be scholarly discussions and should be monitored by the teacher.

4. **Conclusion**
   a. How are we all feeling about the project?
      i. Let’s look over the rubric.
         1. It needs to be done by tomorrow.
         2. I expect complete sentences.
         3. The research needs to be deeper than just “googling” it.
   b. What questions do you have?

References
CareerResearchProjectPlanningmyFuture.pdf
Name __________________________

Outline – Career Research Assignment

1. Career and Career Cluster
   Career:
   
   Cluster:

2. Job Prospects: how does the job market look now and in the future for this career.
   Current:
   
   Future outlook:

3. Location of jobs: areas of world, country, state. What specific businesses provide this type of career opportunity.
   Geographical locations:
   
   Names of Businesses:

4. Salary: ranges based on experience, education, skill
5. Duties and responsibilities on the job. BE SPECIFIC! This will be the largest section.

6. Professional organizations that are specific to this field of work. Student chapters and/or professional chapters. NEED TO PRINT AN APPLICATION AND attach to the project.

7. College/training required to prepare for a career. One specific program from higher education (secondary/post-secondary) institution. Include name, address and phone number for the school or training facility.
   - Printed listings of courses required, complete with descriptions.

8. Sources of information – (at least 3 required) (write on the back of this sheet) name of book/website/article/journal/magazine, etc. date author pages, etc
<table>
<thead>
<tr>
<th>Total Points Earned</th>
<th>Possible Points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>75</td>
</tr>
<tr>
<td>On-time (points deducted for being late)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Pages (for books, magazines)</td>
</tr>
<tr>
<td></td>
<td>Date</td>
</tr>
<tr>
<td></td>
<td>Author</td>
</tr>
<tr>
<td></td>
<td>Source(s)</td>
</tr>
<tr>
<td></td>
<td>Name of book/website/magazine, etc.</td>
</tr>
<tr>
<td>6</td>
<td>Course printed</td>
</tr>
<tr>
<td></td>
<td>Major program of study</td>
</tr>
<tr>
<td></td>
<td>Name, address, phone #</td>
</tr>
<tr>
<td></td>
<td>College / PoHing:</td>
</tr>
<tr>
<td>6</td>
<td>Printed application</td>
</tr>
<tr>
<td></td>
<td>Professional organization - name spelled out</td>
</tr>
<tr>
<td></td>
<td>Specific, detailed (largest section)</td>
</tr>
<tr>
<td></td>
<td>Job duties / responsibilities:</td>
</tr>
<tr>
<td>15</td>
<td>Sources</td>
</tr>
<tr>
<td></td>
<td>With what experience/education</td>
</tr>
<tr>
<td></td>
<td>Skills / Knowledge:</td>
</tr>
<tr>
<td>6</td>
<td>Names of businesses</td>
</tr>
<tr>
<td></td>
<td>Geographic location:</td>
</tr>
<tr>
<td></td>
<td>Where jobs located:</td>
</tr>
<tr>
<td>6</td>
<td>Sources for both</td>
</tr>
<tr>
<td></td>
<td>Future</td>
</tr>
<tr>
<td></td>
<td>Current</td>
</tr>
<tr>
<td></td>
<td>Job / Prospects:</td>
</tr>
<tr>
<td>6</td>
<td>Cluster</td>
</tr>
<tr>
<td></td>
<td>Career</td>
</tr>
</tbody>
</table>

Outline - Career Research Grade Sheet: 75 Points
Title: What skills would a good agricultural employee have?  
Grade: 8th Grade  
Subject Area: Lab Science - Agriculture Education

Curriculum Standard(s)

| AFNR-BAS-1   | Demonstrate employability skills required by business and industry |
| AFNR-BAS-3   | Explore, develop, and implement the Supervised Agricultural Experience (SAE) program by researching careers in agriculture and agribusiness |
| AFNR-BAS-9   | Define major components of the animal industry and outline the development of the resulting products, services, and careers |

Learning Objectives (Benchmark) and Assessment:

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to define what makes a good employee and state 3 skills in which someone needs to be employed.</td>
<td>1. Career Plan - Resume</td>
</tr>
</tbody>
</table>

Materials Needed:

- Pencil
- Resume from 7th Grade
- Chromebook
- FFA Employment Skills Handbook

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time, Large and Small Group Work</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bell Work</td>
<td>4 Mins</td>
</tr>
<tr>
<td>a. What career in Agriculture did you pick?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td></td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with &quot;Good Morning, Mrs. Schultz!&quot;</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. 7th Grade Resume</td>
<td>38 Mins</td>
</tr>
<tr>
<td>a. Last year, you took college and careers with me. We created a resume.</td>
<td></td>
</tr>
<tr>
<td>i. Let’s get those out.</td>
<td></td>
</tr>
<tr>
<td>1. They should be on your google docs. If you do not have them, I should still have them if you shared or emailed them to me.</td>
<td></td>
</tr>
<tr>
<td>b. I want you to look over what you have written from last year.</td>
<td></td>
</tr>
<tr>
<td>i. Takedown some notes on a scratch piece of paper.</td>
<td></td>
</tr>
<tr>
<td>ii. What do you think? Do you see any changes?</td>
<td></td>
</tr>
<tr>
<td>c. Let’s look at the FFA Resume Rubric together.</td>
<td></td>
</tr>
<tr>
<td>i. Go through the rubric with your students and have them score themselves as if they turned in this rubric.</td>
<td></td>
</tr>
<tr>
<td>4. Edit Resumes</td>
<td></td>
</tr>
<tr>
<td>a. You are getting closer to graduating from high school and those 4 years go quickly.</td>
<td></td>
</tr>
</tbody>
</table>

Time: 44 Minutes
b. Let’s make some changes to your resume.
   i. Contact Information
      1. Have you moved? Do you need to update any information?
         a. Name, Address, Email Address, and Phone Number
            i. Do they stand out?
            ii. Is your email professional?
               1. This means names, business, not something
cute or funny.
   ii. Employment Objective
      1. A focused objective that states how an employee will help the
         company achieve its goal.
         a. When you were in 7th grade, we left this off but now we want
            to add it.
         b. Think back to your job you researched.
            i. How would you help an employer reach their goal?
               This might mean looking at their website to determine
               what the goal of the company is. You might have to
               change this for each company you apply too.
   iii. Education or Relevant Coursework
      1. Contains complete information (listed in reverse chronological order)
         with relevant courses listed, dates formatted correctly, GPA listed in
         the correct format (if appropriate), including appropriate honors and
         awards.
         a. We did this, and we were sure to place the high school here.
            Check it over. Can you add any rewards? Is everything in the
            same format.
         b. Let’s look at the person sitting next to us. Is it the same
            format? Font? Spacing?
   iv. Relevant Experiences and Skills
      1. Entries are listed in reverse chronological order; company name,
         title, location, and dates are included; strong action verbs used with
         correct verb tense; personal pronouns and extraneous words are
         omitted; bullets are concise, direct and indicate one’s
         impact/accomplishments; results are quantified; bullets are listed in
         order of importance.
         a. We did this, and this should follow the same format as your
            education.
         b. This is where you might have something to add. Did you do
            anything to add to this section in the last year?
   v. Achievements and Honors
      1. Appropriate and relevant achievements and honors listed;
         achievements and honors related to career goal; provides specific
         details related to achievements and honors; listed in reverse
         chronological order.
         a. Some of you placed this on your resume and others did not.
            There is a specific term I want you to think about it. These are
            awards and achievements that are related to your career
            goals.
            i. If you have them, make a section and list them.
   vi. References
1. Listed appropriate references and provided complete contact information for references.
   a. Last year, many of you just picked friends for your references. I am challenging you to change your references to people that know you as a whole. Someone that you talk to about life goals, and someone that wants the best for you.
   i. Remember you must ask someone to be a reference, you cannot just put them down. They need to know that a call might be coming and it gives them time to prepare in case they need that.

vii. Spelling/Grammar/Punctuation
   1. Spelling, grammar, and punctuation are extremely high quality with two or less errors in the document.
   a. This is something that you will want multiple people to look at. Ask them to edit it, or what you could do better.
   b. You will have this opportunity tomorrow.

viii. Format and General Appearance
   1. Does not exceed two pages without overcrowding; margins are acceptable; font size and style is readable (10-12 point); headings reflect content and content substantiates headings; the resume is targeted to job.
   a. Look over these format guidelines. Most of you are good but some will need to look at the format again and redo certain areas.

5. Conclusion
   a. Your edited resume will be due tomorrow.
      i. I challenge you to look at your cover letter too.
   b. Tomorrow bring in 3 copies of your resume and be prepared for an interview.
      i. An individual from the community will be here to help you with your interview skills and look at your resume.

References
## Resume Rubric

### 200 points

<table>
<thead>
<tr>
<th>NAME</th>
<th>MEMBER NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>STATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>Very strong evidence of skill is present 5–4 points</th>
<th>Moderate evidence of skill is present 3–2 points</th>
<th>Weak evidence of skill is present 1–0 points</th>
<th>Points Earned</th>
<th>Weight</th>
<th>Total Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Information</td>
<td>Includes name, address, email address, and phone number; name stands out on resume; provides professional e-mail address.</td>
<td>Name does not stand out; email address is too casual.</td>
<td>Missing name, address, email, or phone number; email address used is inappropriate or unprofessional.</td>
<td>X2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment Objective</td>
<td>Focused objective that states how employee will help company achieve its goals.</td>
<td>Focused objective that states what you want from the company.</td>
<td>No objective identified.</td>
<td></td>
<td>X2</td>
<td></td>
</tr>
<tr>
<td>Education or Relevant Coursework</td>
<td>Contains complete information (listed in reverse chronological order) with relevant courses listed, dates formatted correctly, GPA listed in correct format (if appropriate), includes appropriate honors and awards.</td>
<td>Contains information (listed in reverse chronological order) with relevant courses listed, dates formatted correctly, may show gaps in work history; inappropriate GPA listed, includes appropriate honors and awards.</td>
<td>Information not listed in reverse chronological order, important information missing, information not listed in correct format.</td>
<td>X7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevant Experience and Skills</td>
<td>Entries are listed in reverse chronological order; company name, title, location, and dates are included; strong action verbs used with correct verb tense; personal pronouns and extraneous words are omitted; bullets are concise, direct and indicate one’s impact/achievements; results are quantified; bullets are listed in order of importance.</td>
<td>Entries are listed in reverse chronological order; entries have a pattern of one type of error; action verbs are weak; verb tenses are inconsistent; bullets are not concise or direct and do not indicate impact; bullets are written in complete sentences.</td>
<td>Entries are not in reserve chronological order; most entries do not include company name, dates, location, or position title; bullets are written in complete sentences; verb tenses are inconsistent; bullets are wordy, vague, or do not indicate one’s impact; bullets are not listed in order or importance to the reader; results are not quantified when appropriate; irrelevant or outdated information is listed.</td>
<td></td>
<td>X9</td>
<td></td>
</tr>
</tbody>
</table>
## Resume Rubric continued

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>Very strong evidence of skill is present 5–4 points</th>
<th>Moderate evidence of skill is present 3–2 points</th>
<th>Weak evidence of skill is present 1–0 points</th>
<th>Points Earned</th>
<th>Weight</th>
<th>Total Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievements and Honors</td>
<td>Appropriate and relevant achievements and honors listed; achievements and honors related to career goal; provides specific details related to achievements and honors; listed in reverse chronological order.</td>
<td>Appropriate and relevant achievements and honors listed; achievements and honors related to career goal; lacks specific details related to achievements and honors; listed in reverse chronological order.</td>
<td>Achievements and honors not listed in reverse chronological order; inappropriate or irrelevant achievements listed; no achievement or honors are listed.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>References</td>
<td>Listed appropriate references and provided complete contact information for references.</td>
<td>References are listed, but not all may be appropriate or not all contact information for references is included.</td>
<td>Inappropriate references are listed; no references listed; no contact information listed.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spelling/ Grammar/ Punctuation</td>
<td>Spelling, grammar, and punctuation are extremely high quality with two or less errors in the document.</td>
<td>Spelling, grammar, and punctuation are adequate with three to five errors in the document.</td>
<td>Spelling, grammar, and punctuation are less than adequate with six or more errors in the document.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Format and General Appearance</td>
<td>Does not exceed two pages without overcrowding; margins are acceptable; font size and style is readable (10–12 point); headings reflect content and content substantiates headings; resume is targeted to job.</td>
<td>Does not exceed two pages; appears overcrowded; margins are acceptable; font size and style is readable (10–12 point); headings don’t necessarily reflect content and content substantiates headings; resume is targeted to job.</td>
<td>Exceeds two pages; margins are inappropriate; font style is unreadable; font size is too small or too large.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL POINTS**
Day 40  Mrs. Katelyn Schultz
Title: How will you become part of the Agricultural Industries workforce?  Time: 44 Minutes
Grade: 8th Grade  Subject Area: Lab Science- Agriculture Education

Curriculum Standard(s)

| AFNR-BAS-1 | Demonstrate employability skills required by business and industry |
| AFNR-BAS-3 | Explore, develop, and implement the Supervised Agricultural Experience (SAE) program by researching careers in agriculture and agribusiness |
| AFNR-BAS-9 | Define major components of the animal industry and outline the development of the resulting products, services, and careers |

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<table>
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<tr>
<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to ask 3 questions to a guest speaker that will come in and talk about their business and the role it plays in the Agricultural Industry.</td>
<td>1. Career Plan - Employable skills</td>
</tr>
</tbody>
</table>

Materials Needed:
- Pencil
- Chromebook
- FFA Interview Rubric
- Individuals from Community 5-8

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time, Large and Small Group Work</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bell Work</td>
<td>4 Mins</td>
</tr>
<tr>
<td>a. Should you shake hands with those that are interviewing you?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td>38 Mins</td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. Work with a professional</td>
<td></td>
</tr>
<tr>
<td>a. Today, we have a representative from the following businesses.</td>
<td></td>
</tr>
<tr>
<td>i. Pearl City Elevator and Foley Farms - Matt Foley</td>
<td></td>
</tr>
<tr>
<td>ii. Adkins Energy - Joan Strong</td>
<td></td>
</tr>
<tr>
<td>iii. Community Bank - Jason Kempel</td>
<td></td>
</tr>
<tr>
<td>iv. A.J Lena Maid Meats - Marcia Pax</td>
<td></td>
</tr>
<tr>
<td>v. Ag Tech - Drew Spidahl</td>
<td></td>
</tr>
<tr>
<td>vi. Stateline Solar - Ethan Fiene</td>
<td></td>
</tr>
<tr>
<td>vii. H&amp;S Landscaping - Matt Huber</td>
<td></td>
</tr>
<tr>
<td>viii. Stephenson Service Co. - Brynn Groezinger</td>
<td></td>
</tr>
<tr>
<td>b. You are going to be working with one of these individuals. There will be about 2 of you in a group. You are going to go through a small interview with them and then they are going to offer you feedback on your interview and your resume. You are</td>
<td></td>
</tr>
</tbody>
</table>
also going to be required to ask them questions one after your interview and 1 about their job and 1 about your future.

i. They will be giving you a grade based on the FFA rubric
   1. Email the rubric to the professionals before they enter your classroom. You should be respectful of their time and email it to them with plenty of time and not just the day before.
   ii. The professionals might bring in their own forms for interviews. This is encouraged but, they will need to use the FFA rubric to mimic the Employability Skills that the FFA does.

4. Conclusion
   a. Thank you to everyone that came in to help us work on becoming better employees in the future. We have been working hard on understanding agriculture, our role, and becoming impactful members of society.
   b. Does anyone have any questions?
   c. Have a wonderful weekend and we will see you next week.

References
# Personal Interview Rubric

500 points

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>Very strong evidence of skill is present 5-4 points</th>
<th>Moderate evidence of skill is present 3-2 points</th>
<th>Weak evidence of skill is present 1-0 points</th>
<th>Points Earned</th>
<th>Weight</th>
<th>Total Points</th>
</tr>
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<tbody>
<tr>
<td>Appearance</td>
<td>Professional dress/groomed: Follows standard dress code, polished shoes, clothes pressed, conservative accessories.</td>
<td>Dress appropriate: Just not as professional and “put together”, shoes clean, but not polished.</td>
<td>Very disheveled: Dirty shoes, not wearing black shoes.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Response to Questions</td>
<td>Used appropriate language for career: Cited relevant examples; evidence knowledge of career field (talk the talk), knows education and experience required for position; discussed skills gained through school or past jobs and how they are relevant to position applied; abilities described match the resume; responses concise and logically communicated; responses do not sound “canned” provided in-depth description of skills; not just a list, provided in-depth response to questions; not yes/no responses to establish a “theme” that overall describes their abilities.</td>
<td>Seemed to know terms associated with career: Some holes, cited several relevant examples, but list is incomplete, knew about career, but conveyed incomplete picture unsure of education or experience required for position; incomplete list of skills gained through school and past jobs and relevance to position applied; abilities mostly match resume; responses seemed rehearsed and somewhat disorganized; provided some depth to description of job skills; provided some depth to responses to questions; provided some yes/no responses; was able to tie some abilities together to form a picture of qualifications.</td>
<td>Knew some of the language of position, but used incorrectly or did not show understanding of terms: Unable to cite or few relevant examples; position education and requirements not known or does not match applicants skill set; unable to relate skills learned in school or past jobs and relevance to position applied, abilities hardly match resume; responses seemed “canned” with little logical progression; mainly provided list of skills with little explanation; provided yes/no responses; unable to see an overall theme of persons abilities.</td>
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### Personal Interview Rubric continued

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<th>Points Earned</th>
<th>Weight</th>
<th>Total Points</th>
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<tr>
<td><strong>Communication Skills</strong></td>
<td>Persuasive: Led the interview in a direction that enabled them to expand so their skills were expressed, took initiative to add information beyond question asked. Confident: Exhibited self-confidence with body language and verbally. Appropriate volume: Spoke with proper volume for room to be heard clearly; not too loud, not too soft. Enunciation/grammar: Avoided words like “get” versus “get” and “again” versus “again”, used proper words when speaking (didn’t use 10 dollar words when a five dollar word will do). Concise: Avoided run on sentences and answered with logical and organized thoughts. Sincere: Expressed true interest in the position they are seeking. Poise: Avoids distracting mannerisms such as drumming fingers or overuse of “uhm” and “you know”. Discretion/Tact: Shared appropriate information and did not create an awkward situation through responses.</td>
<td>Persuasive: Was able to expand somewhat on skills that are a fit for the position, volunteered some additional information to questions asked. Confident: Exhibited some nervousness, but covered well; voice and body language showed some uncertainty. Appropriate volume: Did not modulate volume to express answers, could hear sometimes; but quiet when unsure of response and hard to hear. Enunciation/grammar: Some language not appropriate for position applied, used some slang and exhibited some “dialect”. Concise: Some questions answered in a rambling fashion, but point was able to be made. Thoughts were logical, but somewhat disorganized. Poise: Seemed comfortable with some nervousness, caught self before exhibiting distracting mannerisms, rarely used “uhm” or “you know”. Discretion/Tact: Most professional in tone and shared information that created little, if any, awkwardness.</td>
<td>Persuasive: Answered yesorno to most questions, did not expand on skill set. Confident: Did not appear comfortable, nervous, slouched in chair. Appropriate volume: Hard to hear answers or volume too loud for room. Enunciation/grammar: Used overly complex or simplistic language, sprinkled in words like “git” versus “get” and “agen” versus “again”. Concise: Rambled and used run on sentences. Answers were poorly organized and thoughts not clearly expressed. Sincere: Seemed uninterested in the position and distracted. Poise: demonstrated distracted mannerisms such as tapping foot, drumming fingers, cracking knuckles, etc. Excessive use of “uhm” and “you know”. Discretion/Tact: Shared information that may be seen as personal about someone else creating awkwardness, appeared unprofessional.</td>
<td></td>
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<tr>
<td><strong>Conclusion</strong></td>
<td>Posed appropriate questions of interviewer: e.g., when notification of selection will occur and how. Clarified next steps, inquired as to next step in interview process e.g., if there will be additional interviews, etc. Appropriate thanks and exit: Asked for business card, thanked interviewer, stands and shakes hands prior to exiting room.</td>
<td>Questions posed were somewhat appropriate: Some had no relevance to interview, incomplete inquiry of the next steps in the interview process, Asked for business card, thanks interviewer and shook hand but seemed uncertain how to end the interview and exit.</td>
<td>Asks no questions: Questions asked (if asked), have no relevance to next steps in the interview process. Ends interview abruptly or awkwardly, exits without thanks or shaking hands.</td>
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</tr>
<tr>
<td>Day</td>
<td>Essential Question</td>
<td>Objective</td>
<td>Assessment</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Day 41:</td>
<td>Where does your food come from?</td>
<td>Students will be able to describe the Animal Food Product Pathways: Farm to Fork and determine where their food comes from.</td>
<td>Animal Food Product Pathways: Farm to Fork Quiz</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Day 42:</td>
<td>How are our food processed?</td>
<td>Students will identify the five processing methods and their characteristics.</td>
<td>Food Processing Pathways Quiz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 43:</td>
<td>What is an import and an export?</td>
<td>Students will be able to identify five imported food products and five exported food products.</td>
<td>Import vs. Export Quiz</td>
<td></td>
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</tr>
<tr>
<td>Day 44:</td>
<td>What can a food label tell you?</td>
<td>Students will be able to interpret a food label.</td>
<td>Label Interpretation Quiz</td>
<td></td>
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</tr>
<tr>
<td>Day 45:</td>
<td>What is the USDA My Plate?</td>
<td>Students will be able to correlate the information on food nutrition labels to the dietary guidelines of the USDA My Plate.</td>
<td>Healthy vs. Unhealthy Infographic</td>
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</tbody>
</table>
Day 41

Mrs. Katelyn Schultz

Title: Where does your food come from?

Grade: 8th Grade

Grade: 8th Grade

Subject Area: Lab Science - Agriculture Education

Time: 44 Minutes

Curriculum Standard(s)

<table>
<thead>
<tr>
<th>Curriculum Standard(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFNR-BAS-4</td>
<td>Recognize how agriculture meets human needs today, in the past, and for the future</td>
</tr>
<tr>
<td>AFNR-BAS-5</td>
<td>Determine and illustrate safety in the agriculture lab and agriculture worksites</td>
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<tr>
<td>AFNR-BAS-9</td>
<td>Define major components of the animal industry and outline the development of the resulting products, services, and careers</td>
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<td>AFNR-BAS-11</td>
<td>Apply principles of science to food processing to provide a safe, wholesome and nutritious food supply</td>
</tr>
<tr>
<td>AFNR-BAS-12</td>
<td>Apply principles of environmental science as it relates to agricultural production and sustainability</td>
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</table>

Learning Objectives (Benchmark) and Assessment:

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to describe the Animal Food Product Pathways: Farm to Fork and determine where their food comes from.</td>
<td>1. Animal Food Product Pathways: Farm to Fork Quiz</td>
</tr>
</tbody>
</table>

Materials Needed:

- Pencil
- White Paper
- Coloring Supplies
- Animal Food Product Pathways: Farm to Fork Notes Sheet
- Animal Food Product Pathways: Farm to Fork Quiz

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time, Large and Small Group Work</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional Strategy: Individual Work Time, Large and Small Group Work</td>
<td>4 Mins</td>
</tr>
<tr>
<td>1. Bell Work</td>
<td>10 Mins</td>
</tr>
<tr>
<td>a. Where does your food come from?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td></td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>1. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. Animal food products:</td>
<td></td>
</tr>
<tr>
<td>a. Animal food products come from beef, pork, poultry, and dairy</td>
<td></td>
</tr>
<tr>
<td>i. Beef products come from beef cattle, and products include hamburgers, steak, roasts.</td>
<td></td>
</tr>
<tr>
<td>ii. Pork products come from pigs and include ham, pork chops, bacon, sausage.</td>
<td></td>
</tr>
</tbody>
</table>
iii. Poultry products come from any domestic bird raised for food, and the most common include chicken and turkey. Poultry also produces eggs.
iv. Dairy products come from dairy cattle and include milk, ice cream, yogurt, cheese.

b. Production: the type of operation or process involved in manufacturing animal food products.
   i. Farm: land used to raise animals or grow crops.
   ii. Ranch: a large area of grass or pasture land where animals freely roam and graze.
   iii. The production process includes animal selection, breeding, and slaughter.
   iv. Handling of unprocessed products like raw milk.

c. Processing: the process of converting the original, raw product into a final product ready for distribution and consumption.
   i. Prepared processed foods like deli meat, cheese slices, yogurt, hot dogs, etc.
   ii. Grading: sorting the product based on quality, like Prime beef, Grade A milk or Grade AA eggs
   iii. Cleaning: removes unwanted materials from the food products, for example washing eggs
   iv. Preserving: prevents the food from spoiling before it reaches the consumer and extends its shelf life
   v. Portioning: dividing the food products into serving sizes and packaging amounts
   vi. Packaging: storing the food products in containers, like egg cartons, milk jugs, etc.

d. Distribution: preparing the animal food products to be sold
   i. Packaging: types of containers to keep food safe during transportation
   ii. Storage requirements – the way the particular food product must be stored to stay fresh
   iii. Shelf-life: the amount of time a food product can remain on the shelf without spoiling

e. Marketing: selling of animal food products to the consumer; connecting the consumer to the product.
   i. Retail: the selling of products directly to consumers, such as grocery store chains.
   ii. Wholesale: buying or selling in large quantities for resale
   iii. Restaurants: sell prepared foods to consumers.

4. How would you map your food?
   a. You are going to be given a white sheet of paper. On there, you are going to show us how you get your food? Everyone will have similarities but overall they will be different.
      i. For Example
         1. I get my beef from our farm. So I would draw my steer in a pasture at my house. He is then transported to A.J. Lena Maid Meats where he is processed and then I pick it up and put it in my freezer at home.
            a. Your beef might go on a different path. How will yours be different?
      b. Draw a picture for each of the four pathways. You should use a separate piece of paper for each. Be specific. These should be neat and colorful.
5. Quiz
   a. Clear your desk for a quiz
      i. Answers these questions based on your understanding of today's lesson.
      ii. Food Products
      iii. Responsibilities of producers
      iv. What is processing
      v. Impact of Distribution
      vi. Marketing

6. Conclusion
   a. Pay attention to where you get your food from.
   b. Do you go grocery shopping with your parents? Have you ever looked at the labels to see where the item is processed?

References
https://ffa.app.box.com/s/2s3w6e7ft0ez8oyfc36gfpk20ifpzmen/file/301309098656
Animal Food Product Pathways: Farm to Fork

Mrs. Schultz

Animal food products:

- Animal food products come from beef, pork, poultry, and dairy
  - Beef products come from beef cattle, and products include hamburger, steak, roasts.
  - Pork products come from pigs and include ham, pork chops, bacon, sausage.
  - Poultry products come from any domestic bird raised for food, and the most common include chicken and turkey. Poultry also produces eggs.
  - Dairy products come from dairy cattle and include milk, ice cream, yogurt, cheese.
Production

- Production: the type of operation or process involved in manufacturing animal food products.
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Distribution

- Distribution: preparing the animal food products to be sold
  - Packaging: types of containers to keep food safe during transportation
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Marketing

- Marketing: selling of animal food products to the consumer; connecting the consumer to the product.
  - Retail: the selling of products directly to consumers, such as grocery store chains.
  - Wholesale: buying or selling in large quantities for resale
  - Restaurants: sell prepared foods to consumers.
Animal Food Product Pathways: Farm to Fork QUIZ

Directions: Read each statement and decide which response is appropriate by circling the correct letter that corresponds with the selected response, or by writing the response in the space provided.

1. Animal food products are edible products that come from:
   a. Beef Cattle
   b. Swine (pigs)
   c. Poultry
   d. Dairy Cattle
   e. All of the above

2. List two responsibilities that producers have for preparing animals.
   a. __________________________________________
   b. __________________________________________

3. The process of converting raw products into consumer-ready products is called processing.
   a. True
   b. False

4. List two of the three factors that impact the distribution of animal food products that were identified in class.
   a. __________________________________________
   b. __________________________________________

5. _____________ is the process of selling animal food products to wholesalers, retailers, restaurants, and consumers.
   a. Manufacturing
   b. Marketing
   c. Trade
   d. Promoting
Curriculum Standard(s)

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Materials Needed:

- Pencil
- Methods of Processing Food PowerPoint
- Methods of Processing Food Quiz
- Methods of Processing Food Notes
- Fruit
- Oven
- Cooking Sheet with Rim
- Pre-Dehydrated Fruit
- Knife or Kitchen Sheers

Lesson Procedures:

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<td>3. Methods of processing food:</td>
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<td>a. Foods are processed to extend their shelf life, prevent foods from spoiling, keep foods safe, and to change the products into different forms for consumption.</td>
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</tr>
<tr>
<td>i. Pasteurization</td>
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</tr>
<tr>
<td>1. form of heat processing.</td>
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</table>
3. Destroys pathogenic microorganisms in food, but does not destroy microorganisms that cause spoilage; kills microorganisms that carry diseases and make people sick, but does not kill microorganisms that make the food go bad.
4. Dairy products like milk are examples of foods that are pasteurized.

b. Dehydration
   i. The process of removing water from foods.
   ii. Methods include: sun drying for sun-dried tomatoes, freeze drying for instant coffee, or by using air with a dehydrator for beef jerky.
   iii. Moisture can be added back into foods that are freeze dried, like instant coffee or mashed potatoes, but moisture cannot be added back into dehydrated foods like beef jerky.

c. Freezing
   i. Frozen foods are stored at 0°F, Freezing keeps foods safe from microorganisms, and when done properly, maintains the color, quality, taste, and texture of foods.
   ii. Frozen foods have a long shelf-life and can remain frozen and safe to eat for months at a time.
   iii. If foods are not packaged and frozen properly, they can become freezer burned, where they become very dry and lose flavor, become discolored, and are not desirable for consumption.

d. Fermentation
   i. Protects foods against microorganisms.
   ii. Uses microorganisms like yeast, mold, and some bacteria to preserve and change the state of the food.
   iii. Fermented foods include: pickles, olives, sausage, bread, and cheese.

e. Canning
   i. A form of heat processing.
   ii. Has the longest shelf-life of any heat processed food – can stay preserved for years as long as the package is not damaged.
   iii. Jars are filled with heated food products, or heated after they are filled.
   iv. Canner’s brine: liquid added to the jar that can be either sugar- or salt-based and helps with preservation. For example, salt-based brine in a can of tuna, or sugar-based brine in a can of peaches.

4. Let’s Dehydrate Some Fruit
a. Teachers should make a pan in advance so students can try some when they are done with notes and prepping the dehydrated fruit.
   i. Recipe
      1. Pick your fruit and slice it into ¼ of an inch size pieces.
      2. Line a rimmed sheet pan with parchment paper and place the fruit on it, leaving a bit of space in between each piece as though you were roasting vegetables. Slide the pan into the oven and leave the door slightly open.
      3. Bake the fruit at 200 F, stirring every 30 minutes or so, until it’s dry and chewy. Depending on how watery the fruit is, this can take anywhere from 3 to 6 hours.
      4. When the fruit is dried to your liking, turn off the oven and open the door all the way to cool it down. After 20 minutes or so, close the
oven door and let the fruit sit for another few hours, or up to overnight.

5. Store dried fruit in airtight containers in the refrigerator. Toss it into granola, oatmeal, pancakes, waffles, muffins, or quick breads, or just eat it as is.
   i. I have fruit that I dehydrated but, this is what your fruit would turn out like.
   ii. Students may eat the dried fruit.

5. Quiz
   a. Clear your desk for a quiz
      i. Pasteurization
      ii. Canning
      iii. Dehydration
      iv. Freezing
      v. Fermentation

6. Conclusion
   a. What did you think of the fruit?
   b. Is this something that you would want to try at home sometime?
   c. Tomorrow we will look at the Global Food Chain and what it means to export and import goods.

References
https://ffa.app.box.com/s/2s3w6e7ft0ez8oyfc36qfpk20ifpzmen/file/301301433753
https://www.myrecipes.com/extracrispy/diy-dried-fruit
Methods of Processing Food

...  

Mrs. Schultz

Why are food processed?

Foods are processed to extend their shelf life, prevent foods from spoiling, keep foods safe, and to change the products into different forms for consumption.
**Pasteurization**

- form of heat processing.
- Microorganism: small living thing, like bacteria.
- Destroys pathogenic microorganisms in food, but does not destroy microorganisms that cause spoilage; kills microorganisms that carry diseases and make people sick, but does not kill microorganisms that make the food go bad.
- Dairy products like milk are examples of foods that are pasteurized.

**Dehydration**

- The process of removing water from foods.
- Methods include: sun drying for sun-dried tomatoes, freeze drying for instant coffee, or by using air with a dehydrator for beef jerky.
- Moisture can be added back into foods that are freeze dried, like instant coffee or mashed potatoes, but moisture cannot be added back into dehydrated foods like beef jerky.
Freezing

- Frozen foods are stored at 0°F, freezing keeps foods safe from microorganisms, and when done properly, maintains the color, quality, taste, and texture of foods.
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4. Store dried fruit in airtight containers in the refrigerator. Toss it into granola, oatmeal, pancakes, waffles, muffins, or quick breads, or just eat it as is.
Methods of Processing Food Notes

Foods are processed to extend their shelf life, prevent foods from spoiling, keep foods safe, and to change the products into different forms for consumption.

a. ____________________________
   i. form of heat ____________________________.
   ii. Microorganism: small living thing, like ____________________________.
   iii. ____________________________ microorganisms in food, but does not destroy microorganisms that cause spoilage; kills microorganisms that carry diseases and make people sick, but does not kill microorganisms that make the food go bad.
   iv. ____________________________ like milk are examples of foods that are pasteurized.

b. ____________________________
   i. The process of ____________________________ water from foods.
   ii. Methods include: ____________________________ for sun-dried tomatoes, freeze drying for instant coffee, or by using air with a dehydrator for beef jerky.
   iii. Moisture can be added back into foods that are freeze dried, like instant coffee or mashed potatoes, but moisture cannot be added back into dehydrated foods like ____________________________.

c. ____________________________
   i. Frozen foods are stored at _____, Freezing keeps foods safe from microorganisms, and when done properly, maintains the color, quality, taste, and texture of foods.
   ii. Frozen foods have a long ____________________________ and can remain frozen and safe to eat for months at a time.
iii. If foods are not packaged and frozen properly, they can become freezer burned, where they become very dry and lose flavor, become discolored, and are not desirable for ______________________________.

d. ______________________________

i. Protects foods against ______________________________.

ii. Uses microorganisms like ______________________________, mold, and some bacteria to preserve and change the state of the food.

iii. ______________________________ foods include: pickles, olives, sausage, bread, and cheese.

e. ______________________________

i. A form of ______________________________.

ii. Has the longest shelf-life of any heat processed food – can stay preserved for years as long as the package is not ______________________________.

iii. Jars are filled with heated food products, or heated after they are filled.

iv. ______________________________: liquid added to the jar that can be either sugar- or salt-based and helps with preservation. For example, salt-based brine in a can of tuna, or sugar-based brine in a can of peaches
Methods of Processing Food Quiz

Directions: Read each statement and decide which response is appropriate by circling the correct letter that corresponds with the selected response, or by writing the response in the space provided.

1. Canned foods have the longest shelf life of any processed foods.
   a. True
   b. False

2. _____________ is the process of removing water from the food products.
   a. Pasteurization
   b. Canning
   c. Dehydration
   d. Freezing

3. Good microorganisms like yeast, mold, and some bacteria, can enhance the flavor or change the state of a food product through the process of _____________.
   a. Canning
   b. Dehydration
   c. Fermentation
   d. Freezing

4. A microorganism is a small living thing.
   a. True
   b. False

5. Frozen foods are stored at______, keeps foods safe from microorganisms, and when done properly, maintains the color, quality, taste, and texture of foods.
   a. 32°F
   b. 0°F
   c. −1°F
   d. −32°F
**Day 43**

**Mrs. Katelyn Schultz**

**Title:** What is an import and an export?

**Grade:** 8th Grade  
**Subject Area:** Lab Science- Agriculture Education

**Time:** 44 Minutes

---

### Curriculum Standard(s)

<table>
<thead>
<tr>
<th>Standard Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Determine and illustrate safety in the agriculture lab and agriculture worksites</td>
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<td>AFNR-BAS-11</td>
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<tr>
<td>AFNR-BAS-12</td>
<td>Apply principles of environmental science as it relates to agricultural production and sustainability</td>
</tr>
</tbody>
</table>

### Learning Objectives (Benchmark) and Assessment:

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will identify the five processing methods and their characteristics.</td>
<td>1. Import vs. Export Quiz</td>
</tr>
</tbody>
</table>

### Materials Needed:

- Pencil
- World Map
- Variety of Produce
- Identify five food products imported and five food products exported Handout
- Import vs. Export Quiz

### Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time, Large and Small Group Work</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bell Work</td>
<td>4 Mins</td>
</tr>
<tr>
<td>a. Where have you heard in terms of imports and exports before?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td>10 Mins</td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>iii. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. Export vs. Import</td>
<td></td>
</tr>
<tr>
<td>a. Export: Goods or any articles of trade or commerce sent out of a country to another country.</td>
<td></td>
</tr>
<tr>
<td>i. These five categories are the main areas of exports from the United States to other countries.</td>
<td></td>
</tr>
<tr>
<td>1. Red Meat Products:</td>
<td></td>
</tr>
<tr>
<td>a. Beef</td>
<td></td>
</tr>
<tr>
<td>b. Pork</td>
<td></td>
</tr>
<tr>
<td>c. Lamb</td>
<td></td>
</tr>
</tbody>
</table>
2. Poultry Products:
   a. Chicken
   b. Duck
   c. Eggs

3. Dairy Products:
   a. Milk
   b. Yogurt
   c. Cheeses

4. Grains and Feeds:
   a. Wheat
   b. Corn
   c. Rice

5. Soybeans
b. Import: Goods or any articles of trade or commerce shipped into a country or region.
   i. These five categories of imports are the main imports into the United States from other countries.
      1. Coffee
      2. Fruits:
         a. Bananas
         b. Mangoes
         c. Pineapples

3. Oilseeds and Products:
   a. Vegetable Oils

4. Vegetables:
   a. Tomatoes
   b. Peppers
   c. Cucumbers

5. Cocoa

4. Where did this come from?
   a. Have you noticed at Sullivan’s (Local Grocery Store) that it tells you where your produce came from?
      i. Today we are going to take a look at these and design a food map.
   b. I have a variety of food and we are going to look at where the produce has come from.
   c. Here is a world map. As we talk about each piece of produce, draw it either in the country or on the outside of the map with an arrow to the country.
      i. Butternut Squash
         1. Mexico
      ii. Tomatoes
         1. United States
         2. Mexico
      iii. Banana
         1. Guatemala
      iv. Pineapple
         1. Costa Rica
      v. Cucumbers
         1. Mexico
      vi. Peppers
         1. Mexico
You can add more to the list or do less. Depends on the time that you have.

### Quiz

a. Clear your desk for a quiz
   - i. Who does the U.S trade with
   - ii. We must import food products because we cannot produce all of the food that is desired in the United States on our soil.
   - iii. Write the definition of “export”
   - iv. List five products imported into the United States.
   - v. List five products exported out of the United States.

b. Turn in your quiz when you are ready.

### Conclusion

a. Tomorrow we will look at food labels.

b. Please bring in a food that you and your family enjoys so we can take a look at it together.

   - i. Do you have any questions?

References

https://ffa.app.box.com/s/2s3w6e7ft0ez8oyfc36gfpk20ifpzmen/file/301301405526
https://ffa.app.box.com/s/2s3w6e7ft0ez8oyfc36gfpk20ifpzmen/file/301309253299
https://www.pinterest.com/pin/554787247842430795/
Identify five food products imported and five food products exported

Export:
Goods or any articles of trade or commerce sent out of a country to another country. These five categories are the main areas of exports from the United States to other countries.
1. Red Meat Products
2. Poultry Products
3. Dairy Products
4. Grains and Feeds
5. Soybeans

Import:
Goods or any articles of trade or commerce shipped into a country or region. These five categories of imports are the main imports into the United States from other countries.
1. Coffee
2. Fruits
3. Oilseeds and Products
   a. Vegetable Oils
4. Vegetables
5. Cocoa
World Map Food Tracker
Import vs. Export Quiz
Directions: Read each statement and write the letter next to the correct choice in the blank provided.

1. ______ The agricultural industry in the United States does not trade with other countries.
   a. True       b. False

2. ______ We must import food products because we cannot produce all of the food that is desired in the United States on our soil.
   a. True       b. False

3. Write the definition of “export” on the line below.
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

4. List five products imported into the United States.
   a. ______________________________________________________
   b. ______________________________________________________
   c. ______________________________________________________
   d. ______________________________________________________
   e. ______________________________________________________

5. List five products exported out of the United States.
   a. ______________________________________________________
   b. ______________________________________________________
   c. ______________________________________________________
   d. ______________________________________________________
   e. ______________________________________________________
Day 44

Mrs. Katelyn Schultz

Title: What can a food label tell you?  
Time: 44 Minutes

Grade: 8th Grade  
Subject Area: Lab Science- Agriculture Education

Curriculum Standard(s)

<table>
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<th>Assessment(s)</th>
</tr>
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<tbody>
<tr>
<td>1. Students will be able to interpret a food label.</td>
<td>1. Label Interpretation Quiz</td>
</tr>
</tbody>
</table>

Materials Needed:

- Pencil
- World Map
- Variety of Produce
- Identify five food products imported and five food products exported Handout
- Import vs. Export Quiz

Lesson Procedures:

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</tr>
</thead>
<tbody>
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<td>1. Bell Work</td>
<td>4 Mins</td>
</tr>
<tr>
<td>a. What is a food label?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td></td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>iii. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. Interpret a food label - Gallery Walk</td>
<td>20 Mins</td>
</tr>
<tr>
<td>a. A food label is comprised of four parts</td>
<td></td>
</tr>
<tr>
<td>i. Serving size</td>
<td></td>
</tr>
<tr>
<td>ii. Calories</td>
<td></td>
</tr>
<tr>
<td>iii. Nutrients</td>
<td></td>
</tr>
<tr>
<td>iv. Footnotes</td>
<td></td>
</tr>
<tr>
<td>b. Serving Size</td>
<td></td>
</tr>
<tr>
<td>i. Details the number of servings in the package.</td>
<td></td>
</tr>
</tbody>
</table>
Serving size standardize food portions and allows consumers to compare foods through similar units of measure.

The size of servings in the packaging influences the number of calories in the food. Pay close attention to serving size because you may accidentally consume too many calories by consuming multiple servings.

c. Calories (and Calories from fat)
   i. A measure of energy in each serving of the packaged food.
   ii. Calories from fat are added to detail how many of the total calories are derived from fat.
   iii. Many Americans consume too many calories and this portion of the label helps consumers manage their caloric intake.
   iv. General Calorie Guide: 40 Calories is low, 100 Calories is moderate, 400+ Calories is high.

d. Nutrients
   i. This section details the quantity of specific nutrients offered by each serving of food.
   ii. Nutrients include: Total Fat (Saturated and Trans Fat), Cholesterol, Sodium, Total Carbohydrate, Dietary Fiber, Sugar, Protein, Vitamins A and C, Calcium and Iron.
   iii. The FDA breaks the nutrients into two groups to assist consumers in healthy choices.
      1. Nutrients to be limited: Fat (Saturated and Trans Fat), Cholesterol, and Sodium. Americans consume enough or too much of these.
      2. Nutrients to get enough of: Dietary Fiber, Vitamin A, Vitamin C, Calcium, and Iron. Most Americans don't get enough of these.

e. Footnotes
   i. This is a required statement that tells the consumer that the percentage daily values (%DV) are based upon a 2,000-calorie diet.
   ii. The Percentage Daily Values (%DV), which is at the top and right side of the food label, tells the consumer what percentage the food accounts for the total dietary amount required for each day) 5% or less is low; greater than 20% is high.

f. Have the student walk around and fill in the blanks to learn about the food label.

4. It's All in a Label – Nutrition Label Interpretation
   a. Directions: Study food labels A, B, C and D below. Use the information in each label to answer the questions at the bottom of the page.
      i. Which of the foods above has the most servings per package?
      ii. Which of the foods above has the largest amount of cholesterol?
      iii. Which of the foods above is highest in protein?
      iv. Which of the foods above has the most calories per serving?
      v. Which of the foods above has the most calories from fat?
      vi. Which of the foods above has the most carbohydrates?
      vii. Which of the foods above has the least sodium?
      viii. Which of the foods above has the highest %DV of iron?
      ix. Which of the foods above is the least fattening?
      x. Which of the foods above is the least healthy to consume?

5. Quiz
   a. Clear your desk for a quiz
      i. Fiber
      ii. Trans Fat vs. Total Fat
<table>
<thead>
<tr>
<th>iii. Sugar</th>
<th>iv. Calories</th>
</tr>
</thead>
<tbody>
<tr>
<td>b. Turn in your quiz when you are</td>
<td></td>
</tr>
</tbody>
</table>

6. **Conclusion**
   a. Tomorrow we will look at the food pyramid.
   b. What do you know about the food pyramid? Do you use it when you are eating?
      i. Do you have any questions?
• **Serving Size**
  
  o Details the number of servings in the package.
  
  o Serving size standardizes food portions and allows consumers to compare foods through similar units of measure.
  
  o The size of servings in the packaging influences the number of calories in the food. Pay close attention to serving size because you may accidentally consume too many calories by consuming multiple servings.
• Calories (and Calories from fat)

- A measure of energy in each serving of the packaged food.
- Calories from fat are added to detail how many of the total calories are derived from fat.
- Many Americans consume too many calories and this portion of the label helps consumers manage their caloric intake.
- General Calorie Guide: 40 Calories is low, 100 Calories is moderate, 400+ Calories is high.
• **Nutrients**

  o This section details the quantity of specific nutrients offered by each serving of food.
  o Nutrients include: Total Fat (Saturated and Trans Fat), Cholesterol, Sodium, Total Carbohydrate, Dietary Fiber, Sugar, Protein, Vitamins A and C, Calcium, and Iron.
  o The FDA breaks the nutrients into two groups to assist consumers in healthy choices.

    § **Nutrients to be limited:** Fat (Saturated and Trans Fat), Cholesterol and Sodium. Americans consume enough or too much of these.

    § **Nutrients to get enough of:** Dietary Fiber, Vitamin A, Vitamin C, Calcium, and Iron. Most Americans don’t get enough of these.
• Footnotes
  - This is a required statement that tells the consumer that the percentage daily values (%DV) are based upon a 2,000-calorie diet.
  - The Percentage Daily Values (%DV), which is at the top and right side of the food label, tells the consumer what percentage the food accounts for the total dietary amount required for each day) 5% or less is low; greater than 20% is high.
Nutrition Facts Label Components Note Sheet

Serving Size
Servings Per Container

Amount Per Serving
Calories
Calories from Fat

% Daily value

Total Fat 1g
Saturated Fat
Trans Fat
Cholesterol
Sodium

Total Carbohydrate
Dietary Fiber
Sugars
Protein

Vitamin A
Vitamin C
Calcium
Iron

% Daily value

*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, 2,000 2,500

Total Fat Less than 85g 80g
Saturated Fat Less than 20g 25g
Cholesterol Less than 300mg 300mg
Sodium Less than 2,400mg 2,400mg
Total Carbohydrate 300g 375g
Dietary Fiber 25g 30g
It’s All in a Label – Nutrition Label Interpretation

Directions: Study food labels A, B, C and D below. Use the information in each label to answer the questions at the bottom of the page.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Letter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Which of the foods above has the most servings per package?</td>
<td></td>
</tr>
<tr>
<td>2. Which of the foods above has the largest amount of cholesterol?</td>
<td></td>
</tr>
<tr>
<td>3. Which of the foods above is highest in protein?</td>
<td></td>
</tr>
<tr>
<td>4. Which of the foods above has the most calories per serving?</td>
<td></td>
</tr>
<tr>
<td>5. Which of the foods above has the most calories from fat?</td>
<td></td>
</tr>
<tr>
<td>6. Which of the foods above has the most carbohydrates?</td>
<td></td>
</tr>
<tr>
<td>7. Which of the foods above has the least sodium?</td>
<td></td>
</tr>
<tr>
<td>8. Which of the foods above has the highest %DV of iron?</td>
<td></td>
</tr>
<tr>
<td>9. Which of the foods above is the least fattening?</td>
<td></td>
</tr>
<tr>
<td>10. Which of the foods above is the least healthy to consume?</td>
<td></td>
</tr>
</tbody>
</table>
It’s All in a Label – Assessment

Directions: Circle the letter next to the correct answer.

1. Most Americans get plenty of dietary fiber.
   a. True
   b. False

2. Trans Fats are a component of Total Fat.
   a. True
   b. False

3. Sugar is an example of a ____________.
   a. Calorie
   b. Fat
   c. Carbohydrate

4. Calories are a source of ____________.
   a. Energy
   b. Fat
   c. Strength

5. If you consume a 4-oz. candy bar with 50 calories per each 1-oz. serving, how many calories are you consuming?
   ___________________________________________________________
   ___________________________________________________________
Day 45  
Mrs. Katelyn Schultz  
Title: What is the USDA My Plate?  
Grade: 8th Grade  
Subject Area: Lab Science- Agriculture Education  
Time: 44 Minutes

Curriculum Standard(s):

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Learning Objectives (Benchmark) and Assessment:

<table>
<thead>
<tr>
<th>Learning Objectives</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to correlate the information on food nutrition labels to the dietary guidelines of the USDA My Plate.</td>
<td>1. Unhealthy vs. Healthy Infographic</td>
</tr>
</tbody>
</table>

Materials Needed:

- Pencil
- Chromebook
- Discovering the USDA My Plate
- Unhealthy vs. Healthy Infographic Rubric

Lesson Procedures:

<table>
<thead>
<tr>
<th>Instructional Strategy: Individual Work Time, Large and Small Group Work</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bell Work</td>
<td>4 Mins</td>
</tr>
<tr>
<td>a. How do you feel about where your food comes from?</td>
<td></td>
</tr>
<tr>
<td>i. Answers will vary</td>
<td></td>
</tr>
<tr>
<td>2. Greet the students and give directions on bell work.</td>
<td>8 Mins</td>
</tr>
<tr>
<td>a. Tell the class, “Good Morning”</td>
<td></td>
</tr>
<tr>
<td>i. They should reply with “Good Morning, Mrs. Schultz!”</td>
<td></td>
</tr>
<tr>
<td>ii. “You have 4 minutes to complete the question of the day.”</td>
<td></td>
</tr>
<tr>
<td>iii. At this time, the teacher will take attendance.</td>
<td></td>
</tr>
<tr>
<td>3. Correlate the information on food nutrition labels to the dietary guidelines of the USDA My Plate</td>
<td></td>
</tr>
<tr>
<td>a. The USDA’s My Plate and the FDA’s Nutrition Facts Labels are very similar, but they play different roles for consumers. Each complements the other if they are used properly.</td>
<td></td>
</tr>
<tr>
<td>i. The obvious difference between the USDA’s My Plate and the FDA’s Nutrition Facts Labels is serving size.</td>
<td></td>
</tr>
</tbody>
</table>
1. The USDA’s My Plate is a general guide to assist consumers on a daily basis to meet nutrient recommendations based upon easy-to-remember serving sizes.

2. The FDA’s Nutrition Facts Labels provide detailed nutrient information for a specific food to be compared to similar foods.

4. Discovering the USDA My Plate
   a. Students will use the USDA’s My Plate website (https://www.choosemyplate.gov/) to discover the key to a balanced diet.
   b. Students can work with a partner to answer the questions.

5. What are some healthy switches?
   a. Make an infographic on a healthy switch that you can make.
      i. For instance let's look at the holiday switch infographic from https://www.choosemyplate.gov/
      ii. Here you see an unhealthy version or serving size vs. a healthy option or serving size. Since the holidays are coming up, what is something you or your family eats that you could find a healthier version of.
      iii. You must include information from nutritional labels on each food, along with serving size, and the food group or groups it is in.

6. Conclusion
   a. Tomorrow we will look at food labels.
   b. Please bring in a food that you and your family enjoys so we can take a look at it together.
      i. Do you have any questions?

References
https://ffa.app.box.com/s/2s3w6e7ft0ez8oyfc36gfpk20ifpzmen/file/301301679681
https://www.choosemyplate.gov/
Discovering the USDA My Plate

Directions: Use the USDA’s My Plate website (https://www.choosemyplate.gov/) to discover the key to your balanced diet.

1. What are the USDA food groups?

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________

2. Complete a My Plate Plan assessment of your diet. How much should you consume of each food group a day?

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________

3. What are the health benefits of each food group?

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________

4. List five things My Plate states about physical activity.

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________
<table>
<thead>
<tr>
<th>Category</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>Your score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message Clarity</strong></td>
<td>The topic and messages of the infographic are clear and easily understood; Intended to inform or convince the viewer.</td>
<td>Topic and main ideas are clear.</td>
<td>Topic is given but the main ideas are unclear or lacking.</td>
<td>Topic and/or main ideas are absent or very unclear.</td>
<td></td>
</tr>
<tr>
<td><strong>Details</strong></td>
<td>Details information from nutritional labels on each food, along with serving size, and the food group or groups it is in.</td>
<td>Detail is added to support each main idea with minimal clutter.</td>
<td>More is needed for understanding. Some are distracting.</td>
<td>Very little detail is provided for the main ideas and understanding is limited.</td>
<td></td>
</tr>
<tr>
<td><strong>Graphics</strong></td>
<td>The graphics used represent information appropriately. Color, shape, size, and arrangement of graphics contribute meaning to the overall message.</td>
<td>Most graphics represent the information appropriately. Color, shape, size, and arrangement are eye catching and contribute some meaning.</td>
<td>All graphics relate to the topic but do not represent appropriately. Color, shape, size, and arrangement are present but do not add to the information.</td>
<td>Graphics do not relate to the topic. Color, shape, size, and arrangement are distracting or misleading.</td>
<td></td>
</tr>
<tr>
<td><strong>Design/layout</strong></td>
<td>The design/layout is neat, clear, and visually appealing.</td>
<td>Is attractive in terms of design, layout and neatness.</td>
<td>Is acceptably attractive though it may be a bit messy.</td>
<td>Is distractingly messy, unattractive, or very poorly designed.</td>
<td></td>
</tr>
<tr>
<td><strong>Mechanics</strong></td>
<td>Capitalization and punctuation are correct throughout. There are no grammatical mistakes.</td>
<td>There is 1 error in capitalization or punctuation. There is 1 grammatical mistake.</td>
<td>There are 2 errors in capitalization or punctuation. There are 2 grammatical mistakes.</td>
<td>More than 2 errors in capitalization or punctuation. There are more than 2 grammatical mistakes.</td>
<td></td>
</tr>
<tr>
<td><strong>Image and info Credits</strong></td>
<td>(0 or 1 pt.)</td>
<td></td>
<td></td>
<td>Credit/citations provided for all images and research information.</td>
<td></td>
</tr>
</tbody>
</table>

**Total**
Food Group Quiz

1. Who provides the information for the food pyramid?
   a. CIA
   b. FDA
   c. FFA
   d. The President
   e. USDA

2. What food group provides us the most protein?
   a. Meat
   b. Dairy
   c. Grains
   d. Vegetables

3. What food group provides us with the most carbohydrates?
   a. Meat
   b. Dairy
   c. Grains
   d. Vegetables

4. Which food group are dairy products in?
   a. Meat
   b. Milk
   c. Grains
   d. Vegetables

5. Which food group provides several macro and micronutrients?
   a. Meat
   b. Dairy
   c. Grains
   d. Vegetables