SECOND GRADE CURRICULUM

Draft

Tennessee Foundation for Agriculture in the Classroom
PO Box 313
Columbia, TN 38402
PREFACE:
The Tennessee Foundation for Agriculture in the Classroom was established to promote "agricultural literacy", or a greater awareness, understanding, and appreciation of agriculture’s influence on our lives, to students throughout the state of Tennessee. The “Plant a Seed in Tennessee” Second Grade Curriculum is just one of the educational resource materials that is available to educators through the Foundation. This material is designed to enhance classroom studies and presentations and to supplement the basic school curriculum. In addition to these materials, training workshops for teachers and other programs are available through the Tennessee Agriculture in the Classroom program.

ABOUT THIS MATERIAL:
This is the first draft of the new Second Grade “Plant a Seed in Tennessee” curriculum. These lessons contain an emphasis on all subject areas. Please keep in mind that it is ONLY a draft. There are many additions, corrections, etc... that have to be made.

Each lesson plan has been correlated to meet Tennessee Department of Education Curriculum Standards.

CONTACTS:
If you have any questions regarding this material or any other material or programs sponsored by the Tennessee Foundation for Agriculture in the Classroom, please contact:

Tennessee Foundation for Agriculture in the Classroom
PO Box 313
Columbia, TN 38402
Phone: 931.388.7872
Fax: 931.388.5818
or
visit our web site
www.tnfarmbureau.org
Background:
Plants are an important part of our everyday lives. We need them to make oxygen, and they provide food and fabric so that we can have something to eat and something to wear. They also provide shelter and can even be used to make fuel for transportation. In some way, we use every part of the plant. We eat the root of some plants, the leaves of other plants, and we eat the fruit. It is seldom that we eat the entire mature plant. Usually when we eat plants, we call them either fruits or vegetables.

The botanical definition for a fruit is the part of a plant that develops from the flower. The fruit contains the seeds of the plant. It covers and protects the seeds. A fruit may have fleshy or dry tissue. The botanical definition of a vegetable is any edible part of a plant that does not contain the seed. Vegetables are usually the roots, stems, or leaves of the plant. These definitions vary greatly from the cultural definitions of fruits and vegetables. Cultural definitions are based upon whether the edible portion of the plant is sweet (fruit) or not sweet (vegetable).

What we consider vegetables are vegetative parts of plants. For example, lettuce is leaves, carrots and beets are roots, and broccoli and cauliflower are immature flowers. Other plant parts are more difficult to identify. Potatoes are not roots; rather, they are swollen underground stems (tubers). Onion bulbs are composed of modified stems and swollen leaves. The roots (which are not eaten) are attached at the base of the bulb.

Seeds are found inside a ripened ovary or the fruit of plants. Seeds develop when a flower is pollinated. A seed contains a hard outer coat (seed coat).
Inside a seed is a young plant (embryo) surrounded by its food supply (cotyledon). Sometimes we eat the seeds of a plant. Some examples include corn, peas and beans, rice, wheat, and nuts.

Seeds are important. They are the means by which plants reproduce. As a seed sprouts, the parts of the plant develop. The roots, the underground part of the plant, take up water and minerals (nutrients needed for growth). The stem supports the leaves and flowers. The leaves capture energy from the sun for the plant (photosynthesis) and contain tiny holes or pores that allow moisture and air in and out of the plant. Seeds come in a variety of sizes, shapes, and colors.

Source: Utah Agriculture in the Classroom

---

**TOPS AND BOTTOMS**

**Activity 1 - Getting to Know Vegetables**

**Materials:**
A variety of vegetables (i.e. carrots, radishes, broccoli, celery, corn, etc.)

**Procedure:**
1. Bring in samples of vegetables.
2. Display the vegetable samples.
3. Have students observe the vegetables.
4. Discuss the differences they observed using their senses. (Differences in shape, texture, color, taste, etc.)

**Activity 2 - Read**

Read *Tops and Bottoms* by Janet Stevens (ISBN 0152928510)

**Activity 3 - Cause/Effect**

**Materials:**
Cause/Effect worksheet

**Procedure:**
1. Have students list causes and effects from the story *Tops and Bottoms*.
2. Have students draw an illustration of one cause/effect.
Activity 4 - Compare/Contrast  
Materials:  
Compare/Contrast worksheet  
Procedure:  
1. Provide students with the “Compare/Contrast” worksheet.  
2. Using the Venn diagram on the “Compare/Contrast” worksheet, compare Hare and Bear. How are they different? How are they alike?

Activity 5 - Idea Web  
Materials:  
Idea Web worksheet  
Procedure:  
1. Read 1/2 to 3/4 of the book.  
2. Have students predict the end of the story using the “Idea Web” worksheet.  
3. After reading the story, have students create a new ending to the story.

Activity 6 - Food Guide Pyramid  
Materials:  
Food Guide Pyramid  
Procedure:  
1. Using the Food Guide Pyramid, discuss what foods are good nutritionally and how often we should eat them.

Activity 7 - Eat Which Part?  
Materials:  
Eat Which Part? worksheet  
Procedure:  
1. Discuss the different parts of a vegetable we eat.  
2. Have students complete the “Eat Which Part?” worksheet.

Activity 8 - Tops and Bottoms Fold up Garden  
Materials:  
Drawing paper  
Crayons  
Markers  
Procedure:  
1. Discuss the different vegetables grown in a garden.  
2. Show the example of a fold up garden provided.  
3. Have students fold their paper in half. Then, in half again. Unfold the paper.  
4. Have students draw a picture of a vegetable garden in the two center sections. The center fold represents the ground level. Students should draw examples of vegetables that grow above and below the ground (i.e. corn, radish, carrots, broccoli, etc.)
5. After their pictures are complete, have students fold the top and bottom sections of their paper toward the pictures so that the top section covers the plants growing above the ground level and the bottom section covers the plants growing below the ground level.
6. Have students write “Tops” on the outside of the top flap and “Bottoms” on the outside of the bottom flap.

**Activity 9 - Salad Preparation**  
**Materials:**  
Various vegetables from Tops and Bottoms

**Procedure:**  
1. Discuss practices for safe food preparation. Ex. wash hands, clean food preparation area, use clean utensils, wash vegetables, etc.
2. Prepare vegetables to make a salad.
3. Make salad, add dressing, serve to students.

**Activity 10 - Mural of Vegetables**  
**Materials:**  
Art supplies

**Procedure:**  
1. Work with students to make a mural of vegetables.

**Activity 11 - Cookbook**  
**Materials:**  
Healthy recipes brought in from home

**Procedure:**  
1. Make a class cookbook of healthy recipes that students have brought from home.

**Activity 12 - Colorful Fruits and Vegetables**  
**Materials:**  
Color Wheel worksheet  
Food-related magazines (to cut out pictures of fruits and vegetables)

**Procedure:**  
1. Provide students with magazines to cut out pictures of fruits and vegetables.
2. Discuss the variety of colors of fruits and vegetables and the health benefits of eating a variety of colors.
3. Glue the pictures into the appropriate area of the color wheel on the worksheet.
Activity 13 - Burger Snacks

Materials:
- 2 vanilla wafers
- 1 chocolate cookie
- Red icing
- Yellow icing
- Green coconut

Procedure:
1. The vanilla wafers represent the hamburger buns.
2. The red and yellow icing represents ketchup and mustard. Simply put icing on each vanilla wafer.
3. Put the chocolate cookie on next in between the hamburger buns that now have icing on them. The chocolate cookie represents the hamburger.
4. Add green food coloring to coconut to represent lettuce. Add “lettuce” to the burger.

Activity 14 - Carrot Necklace

Materials:
- Carrots
- Knife
- Heavy duty needle
- Dental floss

Procedure:
1. Wash carrots and cut into 1/4-inch round slices.
2. Use the disks for mathematical demonstrations, such as counting, addition, subtraction, etc.
3. Thread a heavy duty needle with dental floss. Push the needle through the core of the slices.
4. Once you have strung several slices, tie the ends together to make a necklace.
5. Lay it on paper in a dark, well-ventilated place, making sure the slices don’t touch each other.
6. As they dry, they turn into wrinkled beads. Drying takes a couple of weeks.
7. Have students write or draw a comparison of the necklaces before and after drying.

Activity 15 - Seed Match

Materials (per student or pair of students):
- Peanuts (in the shell)     Paper towel
- Small squash       Paper plate
- Apple        Seed Match worksheet
- Bell pepper
- Strawberry
- Kiwi
- Wheat
- Edamame pod, edible soybean, (found most often in the freezer section at local grocers).

Do not cut them open until the students have made their preliminary seed predictions.
Procedure:
1. Give each student or pair of students a copy of “The Seed Match” worksheet.
2. Have them examine their fruits and grain. Ask them to predict what the seeds will look like on the inside. Some students will recognize that the strawberry and the wheat have seeds that are visible from the outside.
3. Have students color the pictures of the fruits and grain and draw a picture of the appearance of their “prediction” in the top right hand corner of the box.
4. Have them guess how many seeds are on the inside/outside of the fruit or grain. This question can be simplified for younger students by asking if there will be many or few seeds, or greater than or less than a certain number. The prediction number can be written either in the square or on a separate sheet of paper.
5. When the predictions are complete, have the students remove the seeds. Allow them to examine their findings and determine if their predictions were accurate. The seeds from their findings should be placed on the paper plate and labeled so that they can be dried.
6. When the seeds are dry, instruct students to paste them in the box of the fruit that matches the correct seed (The activity can be completed in one day if the instructor has already collected and dried enough seeds to be glued on the worksheet in advance).

Activity 16 - Where Do They Grow?
Materials:
Where Do They Grow worksheet
Crayons/Markers
Scissors
Glue

Procedure:
1. Have students color the crops on the “Where Do They Grow” worksheet.
2. Have them cut out the crops then glue them where they grow using the farmer’s soil line as the marker for above and below the ground.

Activity 17 - Fruits and Vegetables
Materials:
Fruits and Vegetables pictures included on pages 21-23
Fruits and Vegetables worksheet

Procedure:
1. Have students color the pictures of the fruits and vegetables and separate them by cutting along the dotted lines.
2. Using the botanical definition of fruit and vegetable, (Fruit - the part of the plant that develops from the flower. The fruit contains the seed. Vegetable - any edible part of a plant that does not contain the seed.) classify each as a fruit or vegetable by gluing the pictures in the correct column on the “Fruits and Vegetables” worksheet.

Additional Activity - Grow a Garden
Information on gardens begins on page 24.

Adapted from: Louisiana Agriculture in the Classroom, Oklahoma Agriculture in the Classroom, Project Food, Land & People and Utah Agriculture in the Classroom
**Cause/Effect**

List four cause/effect from the story *Tops and Bottoms*. Then, draw a picture of one of your cause/effect.

<table>
<thead>
<tr>
<th>Cause</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Draw a picture of your cause/effect.
List four cause/effect from the story *Tops and Bottoms*. Then, draw a picture of one of your cause/effect.

<table>
<thead>
<tr>
<th>Cause</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hare had lost a risky bet with a tortoise.</td>
<td>Hare had to sell all of his land to Bear to pay off the debt.</td>
</tr>
<tr>
<td>Bear agreed to take the top part of the harvest, and Hare agreed to take the bottom part of the harvest.</td>
<td>Bear was outsmarted because Hare planted vegetables that grew underground.</td>
</tr>
</tbody>
</table>

Draw a picture of your cause/effect.
COMPARE/CONTRAST

How are Hare and Bear different? How are Hare and Bear alike? Use the diagram below to record your comparisons.
<table>
<thead>
<tr>
<th>GRAINS</th>
<th>VEGGIBLES</th>
<th>FRUITS</th>
<th>MILK</th>
<th>MEAT &amp; BEANS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make half your grains whole</td>
<td>Vary your veggies</td>
<td>Focus on fruits</td>
<td>Get your calcium-rich foods</td>
<td>Go lean with protein</td>
</tr>
<tr>
<td>Eat at least 3 oz. of whole-grain cereals, breads, crackers, rice, or pasta every day</td>
<td>Eat more dark-green veggies like broccoli, spinach, and other dark leafy greens</td>
<td>Eat a variety of fruit</td>
<td>Go low-fat or fat-free when you choose milk, yogurt, and other milk products</td>
<td>Choose low-fat or lean meats and poultry</td>
</tr>
<tr>
<td>1 oz. is about 1 slice of bread, about 1 cup of breakfast cereal, or 1/2 cup of cooked rice, cereal, or pasta</td>
<td>Eat more orange vegetables like carrots and sweetpotatoes</td>
<td>Choose fresh, frozen, canned, or dried fruit</td>
<td>If you don’t or can’t consume milk, choose lactose-free products or other calcium sources such as fortified foods and beverages</td>
<td>Bake it, broil it, or grill it</td>
</tr>
<tr>
<td></td>
<td>Eat more dry beans and peas like pinto beans, kidney beans, and lentils</td>
<td>Go easy on fruit juices</td>
<td></td>
<td>Vary your protein routine — choose more fish, beans, peas, nuts, and seeds</td>
</tr>
</tbody>
</table>

For a 2,000-calorie diet, you need the amounts below from each food group. To find the amounts that are right for you, go to MyPyramid.gov.

- Eat 6 oz. every day
- Eat 2 1/2 cups every day
- Eat 2 cups every day
- Get 3 cups every day; for kids aged 2 to 8, it’s 2
- Eat 5 1/2 oz. every day

Find your balance between food and physical activity

- Be sure to stay within your daily calorie needs.
- Be physically active for at least 30 minutes most days of the week.
- About 60 minutes a day of physical activity may be needed to prevent weight gain.
- For sustaining weight loss, at least 60 to 90 minutes a day of physical activity may be required.
- Children and teenagers should be physically active for 60 minutes every day, or most days.

Know the limits on fats, sugars, and salt (sodium)

- Make most of your fat sources from fish, nuts, and vegetable oils.
- Limit solid fats like butter, margarine, shortening, and lard, as well as foods that contain these.
- Check the Nutrition Facts label to keep saturated fats, trans fats, and sodium low.
- Choose food and beverages low in added sugars. Added sugars contribute calories with few, if any, nutrients.

Source: www.mypyramid.gov
Eat Which Part?

Mark which part of the vegetable you eat.

<table>
<thead>
<tr>
<th></th>
<th>Radishes</th>
<th>Beets</th>
<th>Corn</th>
<th>Lettuce</th>
<th>Celery</th>
<th>Onions</th>
<th>Broccoli</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>You eat the top</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>You eat the middle</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>You eat the bottom</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Mark which part of the vegetable you eat.

<table>
<thead>
<tr>
<th></th>
<th>Radishes</th>
<th>Beets</th>
<th>Corn</th>
<th>Lettuce</th>
<th>Celery</th>
<th>Onions</th>
<th>Broccoli</th>
</tr>
</thead>
<tbody>
<tr>
<td>You eat the top</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>(Seeds)</td>
<td></td>
<td>(Leaves)</td>
<td></td>
<td></td>
<td>(Flowers)</td>
<td></td>
</tr>
<tr>
<td>You eat the middle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(Stems)</td>
</tr>
<tr>
<td>You eat the bottom</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Roots)</td>
<td>(Roots)</td>
<td></td>
<td></td>
<td></td>
<td>(Roots)</td>
<td></td>
</tr>
</tbody>
</table>
Tops and Bottoms

fold inward

Corn  Radish  Broccoli  Carrot
COLOR WHEEL

Cut out colored pictures of fruits and vegetables from magazines. Paste the pictures in the correct circles on the color wheel.
# The Seed Match

Use the chart to match the correct seed with the picture of the plant which produces that seed.

<table>
<thead>
<tr>
<th>Peanut</th>
<th>Strawberry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Squash</td>
<td>Kiwi</td>
</tr>
<tr>
<td>Apple</td>
<td>Wheat</td>
</tr>
<tr>
<td>Bell Pepper</td>
<td>Edamame</td>
</tr>
</tbody>
</table>
Name _______________________

Where Do They Grow?

Cut out the crops below and paste them where they grow using the farmer’s soil line. Draw your favorite fruit or vegetable in the blank space and paste it where it belongs.

Cut Here ⇒

Onion  Peanut  Draw your favorite fruit or vegetable here  Potato  Celery  Lettuce
Where Do They Grow?

Cut out the crops below and paste them where they grow using the farmer's soil line. Draw your favorite fruit or vegetable in the blank space and paste it where it belongs.
Fruits and Vegetables

Glue the pictures of fruits and vegetables in the correct column.

<table>
<thead>
<tr>
<th>Fruits</th>
<th>Vegetables</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Name ______________________
FRUITS

Eggplant

Strawberries

Peaches

Pineapple

Cherries

Grapes

Corn

Pears
FRUITS

Cucumbers

Green Peppers

Avocados

Oranges

Almonds

Lemons

Chili Peppers

Peas
All subject areas can be integrated into school gardens. Gardens are also an excellent hands-on learning tool for students. The Tennessee Foundation for Agriculture in the Classroom has an Outdoor Classroom Garden Grant program to help schools who want to start and continue a school garden.

**Raised Garden Beds**

A great garden literally starts from the ground up. Instead of trying to improve difficult school soil, just grow vegetables in topsoil.

Procedure to building a raised garden bed:

1. Build raised beds using railroad ties or other boundary setting instrument.
2. Make a simple frame no wider than what the students can reach across (3'-4').
3. Stack rails up to waist high. As an alternative cinder block or landscape blocks will work.
4. Add good soil. Fill beds with topsoil or black dirt. Bagged soil is slightly more expensive than bulk soil, but hauling bags rather than wheelbarrows can be more practical, especially for smaller beds. NOTE: When you make raised beds, be sure the space between them are wide enough for a lawnmower to get through between the beds.

### Spring Garden Sample

- Carrots & Turnips
- Spinach
- Lettuce
- Swiss Chard & Onions
- Snap Peas
- Beets

### Fall Garden Sample

- Brussel Sprouts & Squash
- Lettuce
- Green Beans
- Tomatoes
- Broccoli & Cauliflower
Self-Contained Garden Tub

Procedure to making a container garden:

a. Find a container (any size storage tub with a lid). Drill a few holes at the bottom of the gravel level around the tub.
b. Add pea gravel (about 2-3 inches).
c. Add a layer of foam insulation and cotton batting. You can find styrofoam construction board insulation at a building supply store and wrap in natural cotton batting found at a fabric store.
d. Add garden soil (about 8-12 inches).
e. Add a PVC pipe through the soil to the cotton batting. This will allow you to add water without disturbing the plants.

Credit: Louise Crowell, Franklin County, 2008 Tennessee Foundation for Agriculture in the Classroom Excellence in Teaching About Agriculture Award Winner
BRIEF DESCRIPTION:
Gathering and charting data on root and shoot growth is fun with these quick and easy seed germinators. Students will learn about germination by sprouting beans.

LEVEL:
Second Grade

SUBJECT:
Science, Language Arts, Reading, Math

SKILLS:
Describing, Investigating, Comparing, Identifying, Analyzing, Comprehending, Measuring, Developing, Following Directions, Reasoning, Thinking Creatively

OBJECTIVES:
The student will:
• learn about germination.
• determine the measurement of plants’ roots.
• graph measurements.
• demonstrate germination.

ESTIMATED TEACHING TIME:
30 minutes

Background:
When a seed gets warmth, air and water, it starts to change. The stem and the root emerge from the seed. This is called germination. Germination occurs if the seed is in a warm place. We plant seeds in the spring, when the ground is warming up. The seed is the food for the baby plant until it can grow its own root system. A seed is germinated when it can grow without the food stored in the seed.

Activity 1 - Seed Germination
Materials:
CD cases
Ruler
Marker
Lima bean seeds
Topsoil
Water

Procedure:
1. Using an old CD case, fill it with topsoil and three lima bean seeds. Make sure the soil is damp.
2. Each day measure the plants’ roots in centimeters.
3. Using a bar graph, graph each day’s growth.

Activity 2 - Sequence
Materials:
A Bean Is A Seed worksheet

Procedure:
1. Give each student the “A Bean Is A Seed” worksheet.
2. Have students number each picture in sequential order of bean growth, beginning with the seed and ending with the bean.
3. Have students cut apart the pictures and staple them in order to make a booklet.
4. Activity extension: complete the foldable booklet on

Science: GLE 0207.1.1
Math: 0206.5.1
Reading: 2.1.07
2.1.09
Language Arts: 0201.2.4
0201.5.2
page 30 and have students describe their bean plant in the space provided.

Activity 3 - Read
Read *From Seed to Plant* by Gail Gibbons (ISBN 978-0823410255)

Activity 4 - Garden in a Glove
Materials:
- Clear plastic gloves (can be found at a food service supply company)
- Cotton balls
- 5 types of seeds, 3-4 seeds of each (Ex. lettuce, carrot, cucumber, tomato, broccoli, etc.)
- Water
- Marker

Procedure:
1. Give each student a clear plastic glove. Have them write their name on the palm of the glove and the names of the seeds on the fingers of the glove.
2. Wet five cotton balls (wring out excess water).
3. Place 3 to 4 seeds on each cotton ball and place one in each finger of the glove. Be sure to place the seeds and cotton ball in the finger labeled with the correct seeds.
4. Have students puff some air into the glove and close with a twist tie.
5. Tape the completed gloves to a window (for warmth from the sun) or place in a warm area of the room.
6. The seeds will germinate in 3 to 5 days (you can check seed packets for germination period). Have students keep a plant diary of their observations each day.
7. Once seeds have germinated (1 1/2 to 2 weeks), transplant them into soil by cutting the tips of the fingers off the glove. Transplant the cotton ball and plant into the soil. Provide them with the things they need to grow into strong plants!
8. Continue to have students record their observations as the plant progresses through its various life cycle phases.

Adapted from: Exploratorium’s Teacher Institute, Illinois Agriculture in the Classroom, Oklahoma Agriculture in the Classroom, and Virginia Agriculture in the Classroom
A Bean is a Seed

Cut out these pictures and put them in the correct order. Number them from one to six.

Glue or staple the pictures in order to make a book.
Bean plants grow from seeds.

Write three words that describe a bean plant.

_____________________
1. ____________________
   ____________________
   ____________________

2. ____________________
   ____________________
   ____________________

3. ____________________
   ____________________
   ____________________

Beans can be green, red, yellow, purple, brown or black.

Seeds need sun, soil, water and air.
Garden in a Glove

VOCABULARY
Annual - life cycle of one year
Perennial - life cycle of more than two years
Germination - to begin to grow (sprout)
Transplant - to remove and plant in another place

What seeds did you plant in each finger?
Write them on the correct line.

Write the date when you see the first sprout.

Number each finger in the order they germinate.

Activity provided by: Shelley Hall, Pike-Scott County Agricultural Literacy Coordinator
1301 E. Washington, Pittsfield, IL 62363
Ph. 217.285.5543 Email smhall@uiuc.edu
Background:
Cows, pigs, sheep, and chickens provide us with meat products, but they also provide us with numerous non-food by-products to benefit us in our everyday lives. For example, beef by-products include china, shoes, cosmetics, etc. Pig by-products include floor wax, medicines, fertilizers, etc. Sheep provide wool, fertilizer, insulation, etc. Chickens provide us with feathers and waste for fertilizer.

Farmers provide food, water, shelter, and medical care for their animals. Cattle and sheep typically graze outside with little need for a barn for shelter. Pigs and chickens are housed in a climate-controlled barn for protection from weather, predators, and disease.

Just like humans, animals have certain dietary needs so that they grow strong and healthy. Farmers meet the dietary needs of their animals through proper feed mixtures.

Activity 1 - Graphing
Materials:
A picture of a cow, a pig, a sheep, and a chicken
A book of each of the above farm animals
Index cards
4 hula hoops
Yarn

Procedure:
1. Place a picture of a farm animal in the four corners of the classroom.
2. Have students go to the corner where their favorite farm animal is displayed.
3. Have students pair with a partner and share why he/she chose that animal as his/her favorite farm animal.
4. Have a student from each group read the book representing their favorite farm animal out loud to the group.
5. Have each student write facts on an index card from the book about their favorite farm animal.

6. **(Venn diagram):** place two sets of hula hoops in the center of the room to form two Venn diagrams. Each hula hoop will be labeled as one of the four farm animals from the corners of the room.

7. Have students place their fact cards in the Venn diagram with the appropriate animal.

8. Within their groups have students work together to determine any facts that are the same for the two animals depicted in the Venn diagram.

9. **(Bar graph):** Using the same animal groups, have one student in each group hold that group's favorite animal picture.

10. Have the other students in the group form a line behind the student holding the animal picture. Explain that students have created a bar graph, and a graph represents facts. 

    - Sheep Cow Pig Chick

11. **(Line graph):** Give the student holding the picture in the first row, the end of a piece of yarn.

12. With the student in the first row still holding the end of the yarn, pass the yarn to the next row, then the third row, and end with the student holding the picture in the fourth row. Explain that students have now formed a line graph and that the line graph and bar graph represent the same information.

13. **(Pie/Circle graph):** Have students in each line join hands.

14. Form a circle beginning with the students in the first line. As the students form a circle, the students in each line take the hand of the last person in the line ahead of them.

15. Once all four groups (lines) are in a circle, have the students drop their hands. Like groups should still be standing next to each other. Have the student holding the picture place the picture on the floor in the center of their group so that everyone can see the favorite animal.

16. As the teacher, stand in the center of the circle with four pieces of yarn.

17. Have the first student of each group take the end of one piece of yarn and return to his/her place in the circle. Explain that this pie graph represents the same information as the above.
Activity 2 - Name that animal

Materials:
- Strips of paper in two different colors
- Farm Babies worksheet

Procedure:
2. Discuss the mother, father, and baby names for animals.
3. Write the names of mother and father animals on strips of paper in one color and the names of baby animals on strips of paper in another color.
4. Divide the class in half and distribute the mother/father strips to one half and the baby strips to the other half.
5. Have students scatter throughout the room. Designate one area of the room as the barn.
6. The object of the game is for all animals to safely make it to the barn. To safely make it to the barn, students must say their mother/father or baby name correctly and match their baby name with the correct mother/father name.
7. On the “Farm Babies” worksheet, have students match the baby with the correct mother and father.

Activity 3 - Virtual Farm Tour
Visit Virginia Cooperative Extension Service (http://sites.ext.vt.edu/virtualfarm/) for a virtual farm tour to help students discover why farming is a part of their lives. Students can explore horse, fish, cattle, dairy, chicken, and wheat farms.

Source: USDA Agriculture in the Classroom

Adapted from: Iowa Agriculture in the Classroom and Oklahoma Agriculture in the Classroom
# Farm Babies

<table>
<thead>
<tr>
<th></th>
<th>Father’s name</th>
<th>Mother’s name</th>
<th>Baby’s name</th>
<th>Avg. # of babies born at one time</th>
<th>Avg. age at which mother first gives birth</th>
</tr>
</thead>
<tbody>
<tr>
<td>bison</td>
<td>bull</td>
<td>cow</td>
<td>calf</td>
<td>1</td>
<td>2 years</td>
</tr>
<tr>
<td>cattle</td>
<td>bull</td>
<td>cow</td>
<td>calf</td>
<td>1</td>
<td>2 years</td>
</tr>
<tr>
<td>chicken</td>
<td>rooster</td>
<td>hen</td>
<td>chick</td>
<td>12-18 eggs</td>
<td>6-7 months</td>
</tr>
<tr>
<td>goat</td>
<td>billy</td>
<td>nanny</td>
<td>kid</td>
<td>1-3</td>
<td>8 months</td>
</tr>
<tr>
<td>goose</td>
<td>gander</td>
<td>goose</td>
<td>gosling</td>
<td>8-10 eggs</td>
<td>2 years</td>
</tr>
<tr>
<td>horse</td>
<td>stallion</td>
<td>mare</td>
<td>foal</td>
<td>1</td>
<td>3 years</td>
</tr>
<tr>
<td>llama</td>
<td>male</td>
<td>female</td>
<td>cria</td>
<td>1</td>
<td>2 years</td>
</tr>
<tr>
<td>rabbit</td>
<td>buck</td>
<td>doe</td>
<td>bunny</td>
<td>6-10</td>
<td>6 months</td>
</tr>
<tr>
<td>sheep</td>
<td>ram</td>
<td>ewe</td>
<td>lamb</td>
<td>1-2</td>
<td>1 year</td>
</tr>
<tr>
<td>swan</td>
<td>cob</td>
<td>pen</td>
<td>cygnet</td>
<td>2-10 eggs</td>
<td>3 years</td>
</tr>
<tr>
<td>swine</td>
<td>boar</td>
<td>sow</td>
<td>pig</td>
<td>4-14</td>
<td>10 mo.-1 year</td>
</tr>
<tr>
<td>turkey</td>
<td>tom</td>
<td>hen</td>
<td>poult</td>
<td>2-10 eggs</td>
<td>6-7 months</td>
</tr>
</tbody>
</table>
Farm Babies

Draw lines to match the fathers, babies and mothers.

- Ram → Lamb → Cow
- Gander → Lamb → Cow
- Boar → Calf → Hen
- Rooster → Chick → Hen
- Bull → Pig → Sow
- Goose → Goslings → Ewe
**Activity 1 - Life Cycles**  
**Materials:**  
Charlotte's Web by E.B. White  
Spider Life Cycle cards  

**Procedure:**  
4. Use the "Four Phase Insect Life Cycle" to compare its life cycle with another insect, such as a beetle.  
5. Compare and contrast the life cycle of a mammal versus a spider, which is an arachnid (has eight legs and two body segments).
**Spider Life Cycle Cards**

**Directions**
1. Cut out and color each of the four pictures.
2. Place the pictures in the correct order of the spider’s life cycle.
3. Glue the pictures to a larger sheet of paper.
4. Write 1-3 sentences below each picture describing the stages.
Four Phase Insect Life Cycle

Credit: http://www.kidfish.bc.ca/cycle.htm
Activity 1 - Grow

Materials:
Grow It Again by Elizabeth MacLeod
Baby Peanut Plants worksheet
Peanuts in the shell
Aluminum pan
Paper towels
Plastic wrap

Procedure:
1. Read aloud Grow It Again by Elizabeth MacLeod (ISBN 978-1550745580).
2. Discuss how seeds, beans, or tops of carrots and even eyes of potatoes can be rooted either in water or topsoil.
3. Shell several raw peanuts and spread them on paper towels in an aluminum pan.
4. Wet the paper towels and cover the pan with plastic wrap. In a few days roots and stems will sprout from the peanuts. Explain that the peanut can get along without soil for a while because of the food stored in the seed. As the water soaks into the seed, the food dissolves. It is broken into tiny bits that become part of the sap. The sap flows into the new roots and stems, bringing them everything they need until the seed runs out of food.
5. On the "Baby Peanut Plants" worksheet, label the correct part of the plant.

Fruit—a usually useful product of plant growth.

Peg—the flower stalk of a peanut plant.

Petal—one of the often brightly colored modified leaves that make up the corolla of a flower.

Stalk—a plant stem especially of a plant that is not woody.

Seedling—a young plant grown from seed.

Adapted from Oklahoma Agriculture in the Classroom
Baby Peanut Plants

This is a picture of a peanut plant. It shows the five important parts of the plant—the leaf, the flower, the peg, the fruit and the root.

The peg is long and thin. It looks like a rope growing into the ground or reaching for the ground. As the end of the peg grows into the ground and gets bigger, it grows into a peanut.

The peanut is the plant's fruit.

Write these words on the lines where they belong.

flower      root      fruit      peg      leaf

1. ___________

2. ___________

3. ___________

4. ___________

5. ___________
Baby Peanut Plants

This is a picture of a peanut plant. It shows the five important parts of the plant—the leaf, the flower, the peg, the fruit and the root.

The peg is long and thin. It looks like a rope growing into the ground or reaching for the ground. As the end of the peg grows into the ground and gets bigger, it grows into a peanut.

The peanut is the plant's fruit.

Write these words on the lines where they belong.

flower  root  fruit  peg  leaf

1. Leaf

2. Flower

3. Peg

4. Fruit

5. Root
Activity 1 - Making a Bean Book

**Materials:**
The Bean Book templates
Scissors
Stapler
Glue

**Procedure:**
1. Cut out the seed coat, seed leaves, and embryo.
2. Cut apart blocks of text, following the dotted lines.
3. Fold the seed leaves (yellow) into the seed coat (tan) and tuck the embryo (green) into upper center of seed leaves.
4. Attach seed parts by stapling along fold.
5. Using the numbers as reference (see below), glue text onto the pages of your Bean Book.
6. Write your name on the cover of your book.

Place Bean Book text in the following order:

1-Front cover
2-Inside front cover
3-Page after inside front cover (first cotyledon)
4-Inside of first cotyledon, next to embryo
5-Inside of second cotyledon, with arrows pointing to parts of embryo
6-Inside back cover
7-Outside back cover
The Bean Book

By: ____________________

Where can you find soybeans?
Almost everywhere! Soybeans can be found in all of these products...
- plastic
- paint
- chocolate
- crayons
- body lotion
- cooking oil
- candles
- printing ink
- biodiesel fuel
- car wax
- tofu
- soap
- insulation
- glue
- makeup
- candy
- cereal
- livestock feed

...and so much more! Check out the ingredients listed on packages around the house or school and see what else you can find!

The bean has a cover called the seed coat. It protects the seed.

Inside the seed coat are two seed leaves (cotyledon). They hold the food the new plant needs to grow.

A baby plant is hiding between the seed leaves. It is called an embryo.

Every kind of seed has three parts. They are the embryo, stored food (cotyledon), and a seed coat.

Bean Book Instructions:
- Cut out the seed coat, seed leaves, and embryo.
- Cut apart blocks of text, following the dotted lines.
- Fold the seed leaves (yellow) into the seed coat (tan) and tuck the embryo (green) into upper center of seed leaves.
- Attach seed parts by stapling along fold.
- Using the numbers as reference (see below), glue text onto the pages of your Bean Book.
- Write your name on the cover of your book.

Place Bean Book text in the following order:
1. Front cover
2. Inside front cover
3. Page after inside front cover (first cotyledon)
4. Inside of first cotyledon, next to embryo
5. Inside of second cotyledon, with arrows pointing to parts of embryo
6. Inside back cover
7. Outside back cover
Fold page carefully on dotted line. Cut along solid line. Unfold.
seed leaves
(cotyledon)

Fold page carefully on dotted line. Cut along solid line. Unfold.