Lessons & Activities to Complement
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You, Too, Can Be Like Mr. Mattoo!

Objective: After completing this activity, students will be familiar with building a physical three-dimensional structure to connect important ideas from linked texts.

Common Core State Standards: CCSS.Math.Content.1.G.A.2; CCSS.ELA-Literacy.RL.1.3; R.L.1.7

Suggested Reading Materials:
IAITC’s Seasons Ag Mag
Who Grew My Soup? by Tom Darbyshire

What You Will Need:
1 single double page of standard-size newspaper per student
1 handle template per student
Tape

Activity Instructions:
1. Begin the lesson by reading “Who Grew My Soup,” and discuss the story as a class.
2. Start with a single double page of standard-size newspaper folded once to standard newspaper size.
3. With the crease at the top, fold the corners in from the top until they meet in the center of the page and crease.
4. Fold a single thickness of the bottom open edge up 1 inch and crease.
5. Fold the same flap again as far as it will go and crease.
6. Turn the entire hat over with the point at the top.
7. Fold the outside bottom edges toward the center and overlap. The further the overlap, the smaller the hat will be.
8. Take the bottom corners and fold them up to the bottom of the band and crease.
9. Fold the bottom piece up across the band and crease. Tuck the end into the band to form the brim of the hat.
10. Fold the triangular section down and tuck into the brim. Crease.
11. Open the hat and flatten the inner area to create a rectangular shape.
12. Square brim and tuck remaining points under.
13. Crease corners square on all four sides.
14. Cut out the handle template on the following page and attach to their hat with tape.
A “Souped-up” Balloon

Objective: Students will listen to and follow oral instructions accurately. They will also use prior knowledge in order to construct a 2-D representation.

Common Core State Standards: CCSS.ELA-Literacy.SL.1.1; SL.1.5; Math.Content.1MD.A.2

Suggested Reading Materials:
- I Will Never Not Ever Eat a Tomato by Lauren Child
- Who Grew My Soup? by Tom Darbyshire
- IAITC’s Seasons Ag Mag

What You Will Need:
- 1 Balloon & Pot Template Per Student
- Yarn—(2) 5 1/2” pieces and (2) 5” pieces
- Tape or glue

Activity Instructions:
1. Have students color their tomato balloon and pot (template on previous page).
2. Measure yarn with a ruler. Each student will need two 5 1/2” pieces for the outsides and two 5” pieces for the inside.
3. Have students cut out their balloon and pot.
4. Attach the yarn to the balloon and pot with tape or glue. The 5 1/2” pieces should go on the outside and the 5” pieces should go on the inside.

Lesson Extenders:
1. Have students write their favorite vegetable on their balloon and then share as a class. You can also use this sharing as an opportunity to survey and tally the class’s favorite vegetables.
2. Students can draw their favorite vegetables on their balloon.
Hungry Illinois Caterpillar

Objective: Students will use prior knowledge and skills to make comparisons between crops in linked text and crops grown in Illinois.

Common Core State Standards: CCSS.ELA-Literacy.RI.1.10; RF.1.4

Next Generation Science Standards: Structures and Processes: 1-LS1-1

Suggested Reading Materials:
The Very Hungry Caterpillar by Eric Carle
Up, Down, and Around by Katherine Ayres
IAITC’s Seasons Ag Mag

Background Information:
You can download The Very Hungry Illinois Caterpillar booklet template from www.agintheclassroom.org. This template includes information about crops grown in Illinois. As the caterpillar eats these crops, more information specific to Illinois is given as a reference. Students will then use the following materials to enhance their booklet by attaching them to the appropriate pages.

What You Will Need:
Cotton Balls
44 Green Label Dots (per student or book)
11 Red Label Dots (per student or book)
Black Marker
Wheat Heads
½" Red Pom Pom Balls
Field Corn Kernels
¼" Green and Purple Pom Pom Balls
Popcorn Kernels
Green Pipe Cleaners
Red Pipe Cleaners
Purple Pipe Cleaners
Green Marker
Yellow Marker
Popsicle Sticks
Green Plastic Wrap
Snack-size Ziploc Bags
Black Pipe Cleaners
Orange Tissue Paper
Black Tissue Paper
White Tissue Paper
Gold Tissue Paper
Hot Glue Gun
Jewelry-size baggies
Activity Instructions:

- **Page 1**: Tear a cotton ball in half. Glue half of the cotton ball onto the leaf to represent the egg.
- **Page 3**: Glue the other half of the cotton ball onto the leaf. Below the leaf, stick 4 green stickers and a red sticker. This is your caterpillar. Using a black marker, draw the face of the caterpillar on the red sticker along with his antennae.
- **Page 5**: Stick 4 green stickers and a red sticker below the watermelon. This is your caterpillar. Using a black marker, draw the face of the caterpillar on the red sticker along with his antennae.
- **Page 7**: Using the stickers and marker, place a caterpillar on the page.
- **Page 9**: Using the stickers and marker, place a caterpillar on the page.
- **Page 11**: Using the stickers and marker, place a caterpillar on the page.
- **Page 13**: Using the stickers and marker, place a caterpillar on the page.
- **Page 15**: Using the stickers and marker, place a caterpillar on the page. In the box, glue heads of wheat. At the top of the barrel, glue red pom poms for the apples.
- **Page 17**: Using the stickers and marker, place a caterpillar on the page. In the box, glue kernels of field corn. On top of the barrel, glue green and purple pompoms for grapes.
- **Page 19**: Using the stickers and marker, place a caterpillar on the page. Cut up a green pipe cleaner into 1-inch sections. Glue these on top of the barrel for green beans. Place kernels of popcorn into a jewelry-size baggie. Glue the baggie in the popcorn box.
- **Page 21**: Using the stickers and marker, place a caterpillar on the page.
- **Page 23**: Using the stickers and marker, place a caterpillar near the leaf on this page.
- **Page 24**: Using red, green and purple pipe cleaners, create a big caterpillar and glue to the page.
- **Page 25**: To make the chrysalis, wrap green plastic wrap around a popsicle stick and glue to the page.
- **Page 27**: Create a bag butterfly by cutting up pieces of orange, white, black and gold tissue paper and putting them in a snack-size baggie. Seal. Take a black pipe cleaner and wrap it around the center of the baggie and then form to look like antennae. Glue or tape to the page.

Lesson Extenders:

1. Do you teach about Monarch Butterflies? Use our second version of *The Very Hungry Illinois Caterpillar*. This booklet is downloadable from our website: [www.agintheclassroom.org](http://www.agintheclassroom.org). Look under Teachers, Classroom Resources, Printable AITC Materials. From there, scroll down to *Very Hungry Illinois Caterpillar-Another Option*.

2. Check out our *Very Hungry Illinois Caterpillar* SMART Board lesson at [www.agintheclassroom.org](http://www.agintheclassroom.org).
**Tops and Bottoms**

**Objective:** After completing this activity, students will have a better understanding of how garden vegetables grow and what part of the vegetable they can eat.

**Common Core State Standards:** RL.1.1, RL.1.2, RL.1.3; RL.1.7; RL.1.9; RL.1.10; SL.1.1; SL.1.2; W.1.2; W.1.3

**Next Generation Science Standards:** Structures and Processes: 1-LS1-1

**Suggested Reading Materials:**
*Tops and Bottoms* by Janet Stevens
IAITC’s Seasons Ag Mag

**What You Will Need:**
Vegetable template from [www.agintheclassroom.org](http://www.agintheclassroom.org)  
2 Paper Fasteners (brads)  
Colored pencils or crayons  
Hole Punch  
Two white paper plates per student  
Scissors  
Glue

**About the Book:**
*Tops and Bottoms*, adapted and illustrated by Janet Stevens, is a story which has its origins in slave stories from the American South. In this trickster tale, a clever hare outwits the lazy bear while planting and harvesting the tops and bottoms of their vegetable garden.

**Key Words:**
- **hare** - The American form of hare is generally called rabbit.  
- **harvest** - The gathering of a crop season. A period in which agricultural work is done and a particular type of weather prevails.

**Getting Started:**
Before reading the book, ask students to think of vegetables they eat. List them on a chart. Emphasize that vegetables are plants grown for food. It may also be necessary to emphasize the difference between fruits and vegetables as the list is made.

As a group, look at the cover of the book. What vegetables are pictured? What animals are pictured? Note the Caldecott Honor Book Award Medal. This award is given to books that have outstanding illustrations. Encourage students to look carefully at the illustrations as the story is read.
Activity Instructions:
1. Have students color and cut out vegetables grown in the book from the vegetable template found on the IAITC website.
2. Next have students fold one plate in half and draw a line down the center of the plate. Color one half of the plate blue and the other half brown.
3. Now have students glue the vegetables on the colored plate. The blue space will serve as the sky, so anything that grows on “top” should be placed on the line “growing” into the blue, anything that grows from the “bottom” should be placed on the line “growing” into the brown side of the plate. When finished, all the vegetables should be lined up on the center line (fold) with the “tops” vegetables showing in the blue and the “bottom” vegetables showing in the brown.
4. Next, write on the second paper plate the words “Tops” and “Bottoms” in their corresponding place on the plate. Now fold the plate in half and cut along the fold.
5. On the left side of the first plate (the one containing the vegetables) place a hole punch about 3 cm in on the line.
6. Lastly, place the two halves labeled “Tops” and “Bottoms” on top of each other and place a hole 3 cm in on the left side. This hole should line up with the decorated plate. Line all the holes up and place a brad to secure the plates. Now the bottom plate should have a cover. When the “Tops” is pulled up it should reveal the crops that grow on top and the same with the “Bottoms.”

Lesson Extenders:
1. Chart: make a chart-list of vegetables before reading Tops & Bottoms to discuss what vegetables were included in the story. Then recall from the story if it was the top or bottom of the vegetable plant.
2. Story Dictation: Complete a shared writing activity in which students suggest ideas and the teacher writes down a story based on one of the illustrations in the book.
3. Letters to Bear and Hare’s Families: Write a letter to the Bear and Hare families. Perhaps students could give them hints on growing vegetables or inquire about how their garden is growing.
4. Writing About Your Garden: Students who have grown a garden might be encouraged to write about their experiences. Students who do not have gardens could write about what their plans would be if they could start a vegetable garden.
“Souper” Detective

Objective: Students will learn how to identify, say and write rhyming words by engaging in rhyming exercises after doing a read aloud of rhyming picture books.

Common Core State Standards: CCSS.ELA-Literacy.RL.1.1, RL.1.2, RL.1.3; RL.1.7; RL.1.9; RI.1.10; SL.1.1; W.1.2

Suggested Reading Materials: IAITC’s Seasons Ag Mag  
Who Grew My Soup? by Tom Darbyshire

What You Will Need:  
Index Cards

Activity Instructions:
1. Do a read aloud with a rhyming picture book, such as Who Grew My Soup?  Start with a picture walk and have students predict the story's main characters, setting and events.  Have students read the title, author's name and illustrator's name.
2. Now read the story and encourage students to say the predictable/repetitive phrases with you.  Pause at the end of a rhyming stanza to see if students can predict which rhyming word comes next.
3. Tell students that we will read the book once more.  Remind students that this picture book has rhyming words in it.  Students will be the rhyme detectives and must touch their nose when they hear two or more words that rhyme.
4. When students touch their nose, stop reading and ask students to identify the words that rhyme.  Write each of these words on index cards and place them in the pocket chart.  When you are finished reading the story, you should have plenty of rhyming word cards in the chart.
5. Pull out all of the cards, mix them up and place them back in the chart.  Call up students to find the rhyming words and then have them stand in the front of the classroom holding their pair of cards.
6. When all of the pairs have been found, have each student at the front of the class read their pair of rhyming words with the rest of the class.
7. Tell students they will now have a chance to make and play their own rhyming game.  Pass out index cards and have students write their own rhyming words on cards.  Pass out baggies for students to store their cards in.

Possible games to play with rhyming cards
• Students can play in pairs or independently during centers, mixing up the cards and finding rhyming pairs.
• Students can record their rhyming pairs in various charts to show evidence of learning.
• Students can play the game like Memory, turning over and matching rhyming pairs.
• Students can take the cards home to practice rhyming on their own.

Lesson Extenders
♦ Post rhyming words all over the classroom and give students magnifying glasses, clipboards and a sheet on which to record their pairs.  Students should be the best "detectives" they can to find rhyming words on word walls, in books, on posters, etc.
♦ Use graphic organizers in order to record rhymes.
♦ Have students write poems or descriptors in the shape of the fruit or vegetable.
♦ Students may write limericks about fruits and vegetables.  A limerick consists of five lines.  The first, second, and fifth lines rhyme and lines three and four rhyme.
♦ Acrostic poems may be written by students.  Have them write the name of a fruit or vegetable vertically on a piece of paper.  Then, a word or words are written next to each letter of the vertical word such that a poem is formed.  Be sure to have them use rhyme in their acrostic poems.
Think Inside the Box!

Objective: Students will follow directions and exercise critical-thinking skills to guess the Puzzle Box word.

Common Core State Standards: CCSS.ELA-Literacy.SL.3.1; W.3.1; W.3.2

Suggested Reading Materials: IAITC’s Seasons Ag Mag

What You Will Need:
Puzzles (teacher must plan puzzle clues in advance)  Black or white board or chart paper and markers
Small rewards, such as pencils  Scrap paper cut into 2-inch by 2-inch squares

Activity Instructions:
Prepare in advance six to ten clues that will help students guess a puzzle word. The puzzle word can relate to any topic or subject they are studying. See an example below:

Puzzle Box: Can you guess what this is?
Answer: Banana
1. I am yellow and sweet.
2. I grow on a tall plant.
3. Monkeys like to eat me.
4. I'm good for your heart.
5. What am I?

1. Write the clues on the board or chart in the morning.
2. Go over the clues with the class first thing in the morning. Share in advance how the process will work.
3. Show the three prizes of the day.
4. Give the students all day to consider what the puzzle word might be.
5. At the end of the day, read the clues again.
6. Pass out the 2-inch by 2-inch squares of paper. Ask students to write the answer, or two or three guesses, on one side of the paper and their name on the other side.
7. Collect the papers. Identify by name any student who has the correct answer. Put all correct answers in a bag.
8. Pull out three of the papers to determine the winners of the three prizes.

Lesson Extenders
♦ Make a chart. Include the name of each child in the classroom. Put a checkmark beside students' names for each right response given each week. After ten weeks, identify the student with the most correct responses. Award special prizes to those with the most correct responses.
♦ You might consider running the puzzle box game for a week. You could provide a clue each day or several on the first day and then add more each subsequent day that follows. Students could submit guesses at any time during the week. Collect answers at the end of each day, and keep them in an envelope with the day marked on the outside. At the end of the week, see how many people guessed the word at the end of each day.
♦ After you have done this activity with older students a few times, you might invite the students to create the puzzles.
♦ Have students write riddles in order to help classmates learn about fruits and vegetables. To help students in this process, have students choose a fruit or a vegetable about which he/she would like to write a riddle.
♦ Have students list descriptive words or facts about their subject. Encourage students to think about color, shape, size, taste, feel, why it is good for you, what you can learn about the fruit or vegetable from its color, different ways to eat the fruit or vegetable. Have students use the list to write a riddle about the subject.
♦ Challenge students to create rhyming riddles.
Mystery “Souper”star

**Objective:** Students will use the senses in order to make predictions. Students will also use descriptive words to share information.

**Common Core State Standards:** S.L.1.1; SL.1.5

**Suggested Reading Materials:**
IAITC’s Seasons Ag Mag  
*Stinky and Stringy: Stem and Bulb Vegetables* by Meredith Sayles Hughes

**What You Will Need:**
5 boxes with lids (cut a hole in the end of each box so a child's hand fits through the hole. Label each box with a different number from 1 to 5.)  
5 different fruits or vegetables  
Scrap pieces of paper for answers  
5 brown paper bags numbered from 1 to 5

**Activity Instructions:**
1. Secretly place a mystery object (fruit or vegetable) in a different box.

2. Invite a child to reach through the hole, touch the mystery object inside, and then share descriptive words about how it feels. Record the descriptions on a sheet of paper.

3. Ask students to write what they believe is in the box, or two or three guesses, on one side of the paper and their name on the other side.

4. Have students place their answers in the bag with the number that corresponds with their answer.

5. Read the descriptive words used by students aloud again before revealing the mystery object.

6. Recognize those students who correctly identified the mystery object.

**Lesson Extender**
- Have students draw pictures of what they think each vegetable or fruit looks like before you reveal the mystery object in the box.
- Invite each child to taste the different mystery objects (fruit or vegetable). Encourage students to describe each mystery object's taste, smell and appearance. Record students' responses and then review the descriptive words with the group.
- Place an assortment of fruits and vegetables in a shopping bag or basket, making sure there are several colors represented. Invite each child to pick a fruit to identify its color. Continue with the remaining fruits, having students place the same-color fruits together.

Adapted from an activity at Dole.com classroom resources for educators.
**Objective:** Students will respond to a writing prompt, learning about fruits and vegetables.

**Common Core State Standards:** RI.3.5; RI.3.10; SL.3.1; SL.3.6; W.3.2; W.3.7; W.3.8

**Suggested Reading Materials:**
IAITC’s Seasons Ag Mag  
*The Enormous Potato* by Aubrey Davis

**What You Will Need:**  
Copies of the writing prompts  
Glue  
Paper

**Activity Instructions:**
1. Invite a child to choose a writing prompt and read it aloud as you copy it onto the board. Lead the class in a discussion of the food and list facts about it on the board.
2. Have each child choose a writing prompt and glue it to his paper.
3. Instruct the student to make a list of facts about the food. If needed, provide time to use resources to verify facts or add to lists.
4. Direct the child to use the facts to complete the response.

**Lesson Extender**
- After publishing the final draft, instruct each student to draw a picture of the food character. Post the stories and illustrations in the classroom or school cafeteria.
- Have students work in pairs to generate a response. Invite students in each pair to act out their writing, with one student serving as the narrator and the other acting as the food character(s).
- Give each student a blank strip and encourage creation of new writing prompts. Remind the child to use a clever food name! Place the prompts in a writing center with glue and paper.

**Possible Writing Prompts**
- Celia and Charlie Celery want everyone to know that they are the stems of plants, so they decide to throw a party and tell everyone about it.
- Patty Potato is one of the most popular vegetables in the United States. She decides to write the story of her life!
- Brooke Broccoli has a story to tell, and it is the story of why broccoli is one of the “super vegetables.” Her story goes something like this.
- Oscar Onions always gets a bad wrap for making people cry. He decides he is going to change the minds of everyone and help them understand how great he makes food taste.
- His bright orange color makes Calvin Carrot an important vegetable for our eyesight. He decides to share the good news about Vitamin K.
- Peter Peas is tired of people deciding they don’t like him. So he decides to do something to get people to like him. Here is what he decides to do.
- Stanley Spinach is happy to be such a popular vegetable, so he decides to tell students ways in which to use him in food.
- Full of protein, Barbara Beans finds herself used in many dishes from countries around the world. She decides to share her story of her travels around the world.
- Tonya Tomato is having a hard time because no one can decide if she is a fruit or a vegetable. Once and for all, she is telling her story and helping to end the confusion.
- Cornelius Corn wants the folks in town to learn some new ways to eat corn, so he decides to…

Adapted from an activity at Dole.com classroom resources for educators.
Beanie Baby

Objective: Upon completion of this activity, students will have a better understanding of the plant germination process.

Common Core State Standards: CCSS.ELA-Literacy.RI.4.3; RI.4.4; RI.4.5; RF.4.3a
Math.Content.4.MD.A.2

Next Generation Science Standards: Structure & Properties of Matter: 5-PS1-4

IL Social Science Standards: SS.EC.1.4; SS.EC.2.4; SS.EC.FL.1.4; SS.G.2.4; SS.G.3.4

Suggested Reading Materials:
*Oh Say Can You Seed* by Bonnie Worth
*One Bean* by Anne Rockwell
*Spill the Beans and Pass the Peanuts* by Meredith Sayles Hughes
IAITC’s Soybean Ag Mag

What You Will Need:
- Jewelry size re-sealable bag
- Measuring spoons
- Crystal Soil
- Green Beans/Lima Beans/Soybeans
- Hole Punch
- Yarn
- Water

Activity Instructions:
1. Punch a hole in the top of your bag.
2. Place 1/4 teaspoon of Crystal Soil into the bag.
3. Add 1-2 green bean or lima bean or soybean seeds.
4. Add one tablespoon of water.
5. Seal your bag firmly.
6. Insert the yarn into the hole to make a necklace.
7. Wear your Beanie Baby around your neck and under your shirt to keep it in a warm, dark place.
8. Check your Beanie Baby several times a day for germination and record the growth.

Lesson Extenders:
1. Try this experiment with other seeds and record the similarities and differences.
2. Experiment with other controls like light, heat, soil medium, water and record the similarities and differences.
Tomato Spinners

Objective: After completing this activity, students will have a better understanding of how vegetables grow and why they are an important part of their diet.

Common Core State Standards: CCSS.ELA-Literacy.RL.K.9; RL.K.10; RI.K.9; RI.K.10; W.K.2; W.K.8; Math.Content.K.G.B.5

Next Generation Science Standards: Structures and Processes: K-LS1-1

Suggested Reading Materials:
I Will Never Not Ever Eat a Tomato by Lauren Child
Who Grew My Soup? By Tom Darbyshire
IAITC’s Seasons Ag Mag

What You Will Need:
1 brad
1 small white dessert plate
pencil
Glue
ruler (optional)
scissors
Colored pencils or crayons
1 red dinner plate or a regular white plate they can color
Stem template from www.agintheclassroom.org or have students draw their own

Activity Instructions:
1. Have the students divide the small dessert plate into eighths by drawing with a pencil and using the ruler as a straight line guide. Plain white paper can be substituted for the small white dessert plates. Just have students trace the large paper plate on a regular sheet of paper and cut it out.
2. Have the students write an Illinois specialty crop fact or facts about vegetables learned from the reading of the Illinois Specialty Crop Ag Mag or Who Grew My Soup? on each one eighth section.
3. Have the students cut a triangle out of the large plate. It should be 1/8th of the plate in size. It should look like a pie slice and line up with the lines drawn on the small dessert plate.
4. Have the students attach the red plate to the front of the divided fact plate with a brad.
5. Have the students glue the tomato stem to the top of the tomato.
6. Now the students can turn their tomato spinner and review the facts about vegetables, especially tomatoes!
**Objective:** After completing this activity, students will have a better understanding of how pumpkins grow and why they are unique to Illinois.

**Common Core State Standards:** CCSS.ELA-Literacy.RI.3.1; RI.3.9; W.3.2

**IL Social Science Standards:** SS.EC.3.2

**Suggested Reading Materials:**
- *Pumpkin Jack* by Will Hubbell
- *Pumpkin Circle: The Story of a Garden* by George Levenson
- IAITC’s Pumkin Ag Mag

**What You Will Need:**
- Orange Construction Paper
- 2 Paper Fasteners for Each Pumpkin (brads)
- Green Construction Paper for Vines
- Hole Punch
- Scissors
- Marker or Pen

**Activity Instructions:**
1. Cut the orange paper lengthwise into 3/4 inch strips. Each student needs four strips.
2. Learn about pumpkins by exploring the IAITC Pumpkin Ag Mag individually or as a class.
3. Identify four pumpkin facts from the Ag Mag. Write one fact on each of the four strips of orange paper.
4. Cut a small square of green paper. This will be the pumpkin’s vine.
5. Stack the strips of paper and hole punch both ends of the stack. Then punch a hole in the center of the strips as well as your green square.
6. Place a brad fastener through the center hole of the green square then the orange strips. Spread the fastener to keep it in place.
7. Grab a second fastener and bend each end of the paper strips down, sliding the fastener through the punched holes at both ends. When all eight ends are attached, spread the fastener inside your pumpkin.
8. Spread out the paper strips to form a spherical pumpkin!

**Extended Response Question:**
Early American settlers began the tradition of making pumpkin pie. Explain other traditions we celebrate in today’s society. Be sure to include your own experiences in your explanation.
Garden in a Glove

**Objective:** Students will conduct a scientific experiment and record data in order to explain the simple life cycle as well as the need of plants.

**Common Core State Standards:** CCSS.ELA-Literacy.RL.K.9; RL.K.10; RI.K.9; RI.K.10; W.K.3; W.K.7; W.K.8; SL.K.3

**Next Generation Science Standards:** Structures and Process: K-LS1-1; Earth and Human Activity: K-ESS3-1

**Suggested Reading Materials:**
*Our Generous Garden* by Anne Nagro
*The Life Cycle of a Carrot* by Linda Tagliaferro
IAITC’s Seasons Ag Mag

**What You Will Need:**
- Clear Plastic Food Service Glove
- Pencil or Popsicle Stick
- Twist Tie
- 5 Cotton Balls
- Water
- 5 Types of Seed
- Permanent Marker

**Activity Instructions:**
1. Write your name on a clear plastic food service glove.
2. Using the permanent marker, write the name of a seed you will be planting on each finger.
3. Wet five cotton balls and wring them out.
4. Dip each cotton ball into 1 seed type. The seeds should stick to the cotton ball.
5. Put the cotton ball with the seeds attached into the finger of the glove that is labeled with that type of seed. **Hint:** For younger students, you may choose to use one type of seed for all 5 fingers. A pencil or popsicle stick may also be handy in pushing the cotton ball to the bottom of each finger.
6. Blow up the plastic glove and close it with a twist tie or tie a piece of yarn around the top.
7. Tape the glove to a window, chalkboard or wall. You may want to hang a clothes line under a chalk tray and use clothes pins to hold the gloves on. **Hint:** Do not tape to the window in the winter when the window will be too cold to allow for germination.
8. The seeds will germinate in 3 to 5 days. Keep a plant diary and look at the seeds under the microscope.
9. Transplant the seeds in about 1 1/2 to 2 weeks by cutting the tips of the fingers off the glove. Transplant the cotton ball and small plants into soil.
10. After growing to full size, vegetables can be harvested to use in your soup!
Grow Your Own Soup

Objective: Students will make predictions about germination and harvest timelines. Students will also identify the impact of environmental factors on the growth cycle.

Common Core State Standards: CCSS.ELA-Literacy.W.1.2; Math.Content.1.NBT.C.4

Next Generation Science Standards: Structures and Processes: 1-LS1-1

Suggested Reading Materials:
Stone Soup by Marcia Brown
The Giant Carrot by Jan Peck
Who Grew My Soup? by Tom Darbyshire
IAITC’s Seasons Ag Mag

Vocabulary Terms:
• Germinate: when the plant’s seed has opened and sends up its first stem
• Harvest: to gather crops when they are mature and ready to eat or store
• Herbs: a group of plants that are used for flavoring or seasoning food or drinks
• Hypothesis: an explanation for something based on what has occurred, an “educated guess”
• Observations: paying attention to how things occur or work and making a note of it
• Prediction: a good guess of what will happen based on your knowledge
• Root Vegetables: a group of vegetables with edible portions growing underground (includes carrots, potatoes and radishes)
• Suppress: to reduce or stop something from happening

What You Will Need:
Calendar
Seed packets of your favorite vegetables

Activity Instructions:
1. Decide which vegetables you will be using for your soup. Be sure to supply students with the appropriate seed packets.
2. Have students create a growth chart to track important dates. Students will also need to keep a journal of their observations.
3. Using a calendar and the seed packets, answer the questions on the following worksheets.

Adapted from a New York AITC activity.
GROW YOUR OWN SOUP

Use a calendar and the seed packets to answer the following questions:

1. Today’s Date __________________________

2. According to the seed package, how many days will it be until the plants are ready to harvest?
   
   Carrot __________
   
   Tomato __________

3. Using a calendar, estimate your harvest dates:
   
   Carrot __________
   
   Tomato __________

4. Which plants will take the longest to be ready for harvest?
   
   ____________________________________________
   
   ____________________________________________

5. What factors can cause your plants to grow faster?
   
   ____________________________________________
   
   ____________________________________________

6. What factors can cause your plants to grow slower?
   
   ____________________________________________
   
   ____________________________________________

7. What factors can cause your plants to stop growing and die?
   
   ____________________________________________
   
   ____________________________________________
GROW YOUR OWN SOUP  

During the time your soup garden is growing, keep a growth chart to track important dates. Be sure to also keep a journal where you can write down all of your observations. Consider the following questions when charting and journaling:

1. Do the plants seem to take a long time to **germinate**?
2. Do the plants **germinate** or start at the same time?
3. Do the leaves all seem the same or are they different?
4. Do the colors of the leaves vary?
5. Do the shapes of the leaves vary?
6. Do the plants have flowers?
7. Do any of the plants grow in clumps?
8. Do any of the plants grow like a vine?
9. Do the plants seem to be healthy?
10. How often do you have to water the plants?
11. Do the plants sometimes look like they need water?
12. Do the plants look yellow?

As you **harvest** your crop, consider these questions to record in your journal:

1. What is the first plant you **harvested**?
2. Did it look like you thought it would? If not, what is different?
3. Did you taste it?
4. What is the difference in the way you **harvest** the plants?
5. Was your indoor garden a success?
6. Would you do something differently next time?
“Souper” Surveys

Objective: Students will learn to organize and display data using charts and graphs. They will also make predictions based on given data.

Common Core State Standards: CCSS.ELA-Literacy.SL.2.1; SL.2.3; W.2.1; W.2.2

Suggested Reading Materials:
Our Super Garden by Anne Nagro
IAITC’s Seasons Ag Mag

What You Will Need:
Paper
Pencil

Activity Instructions:
1. Give each student a survey worksheet (located on the following page).
2. As a class, choose 10 vegetables used in soup that you want to survey other people on to see which is their most favorite and least favorite.
3. Have each student survey 10 people to see what their favorite vegetable in soup is.
4. Tally the votes as a class.
5. Have each student make a chart or graph showing the survey results.

Lesson Extenders:
1. Survey all of the students in your class to see which is their favorite vegetable in soup.
2. In a short paragraph, have the students make comparisons between what their favorite vegetable in soup is versus the favorite vegetables of the people they surveyed. Have them consider the following questions:
   a. What is the most favorite vegetable in soup of the outside survey group?
   b. What is the least favorite vegetable in soup of the outside survey group?
   c. What is the most favorite vegetable in soup in your class?
   d. What is the least favorite vegetable in soup in your class?
   e. Does your class like the same vegetables in soup as the outside survey group?
Name______________________________

**Souper Survey**

Survey 10 people to find out their *most* favorite vegetable in soup. Keep your results in the table below. List the vegetables in Column A. In Column B, place a mark every time it gets a vote. When you’re done, count the marks in Column B and write that number in Column C.

<table>
<thead>
<tr>
<th>Column A: Vegetables</th>
<th>Column B: Votes</th>
<th>Column C: Total</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>
Measure It!

Objective: Students will learn about serving size and use math skills to make predictions.

Common Core State Standards: CCSS.ELA-Literacy.SL.2.1; Math.Content.3.NF.A.1; 3.MD.A.2

Suggested Reading Materials:
IAITC’s Seasons Ag Mag
Green Power: Leaf and Flower Vegetables by Meredith Sayles Hughes

What You Will Need:
- Copies of the recording sheet
- Foods to measure (fruit juice, leafy greens, canned peas, canned fruit, raisins)
- Plastic serving bowls
- Large plastic tumbler or pitcher
- Plastic measuring cups in the following sizes: 1/4 cup, 1/2 cup, and 1 cup

Activity Instructions:
1. Explain to students that different amounts of various kinds of fruits and vegetables are considered a serving. Show students the foods that they will be measuring in their group and tell them how much of each one equals a serving.
2. Name a fruit or vegetable and have each group measure one serving of the item, referring to the serving chart below.
3. Have the group read each question and use the necessary foods to answer the question.
4. After each group has finished, have students share their answers with the class.

Lesson Extenders:
- Make a recipe that involves a variety of measurements.
- Have each child write a menu for one day that contains at least nine servings of fruits and vegetables. Be sure students write the amount of each food they will eat.

<table>
<thead>
<tr>
<th>One Serving Size for Fruits and Vegetables</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4 cup of 100% juice</td>
</tr>
<tr>
<td>1 cup of leafy greens</td>
</tr>
<tr>
<td>1/2 cup of canned or cooked vegetables</td>
</tr>
</tbody>
</table>

1. How many servings of canned soup are equal to 2 cups?
2. How many servings of leafy greens are equal to 8 cups?
3. How many cups of cooked vegetables would you need to serve six people a serving each?
4. How much juice would you need for each person in your group to have a serving?
5. How much dried fruit would you need for ten people to each have a serving?
6. If you ate 2 1/2 cups of canned vegetables, how many servings would you have eaten?

Adapted from an activity at Dole.com classroom resources for educators.
Corn Field Math

**Objective:** Students use number sense, measurement, and data analysis to construct drawings and compute multi-step problems dealing with whole numbers, fractions, and percent's.

**Common Core State Standards:** CCSS.ELA-Literacy.L.5.6; RI.5.10; SL.5.1; W.5.7
Math.Content.5.OA.A.1; 5.OA.A.2; 5.OA.B.3; 5.NBT.B.5; 5.NBT.B.7; 5.NF.B.4; 5.NF.A.2; 5.NF.B.4; 5.NF.B.6; 5.G.A.2

**IL Social Science Standards:** SS.H.1.5; SS.G.1.5; G.2.5; G.4.5

**Suggested Reading Materials:**
IAITC’s Corn Ag Mag
*Corn Belt Harvest* by Raymond Bial

**What You Will Need:**
- computer/resource materials
- calculator
- graph paper
- ruler
- compass
- protractor

**Background Information:**
Corn is a grass, native to the Americas. The exact origin is unknown, but tiny ears of corn have been discovered at ancient village sites and in tombs of early Americans. Evidence of corn in central Mexico suggests it was used there as long as 7000 years ago, where it was domesticated from wild grass. Cultivated corn is known to have existed in what is now the southwestern US for at least 3000 years. In the United States, many of the various Native American tribes have traditionally grown corn—also known as maize—and used it for both food and utilitarian purposes. Eastern tribes shared their knowledge of corn production with early European settlers, an act which saved many from starvation.

Early American colonists dried corn and ground it as meal for flour. They used the ground corn in porridge, cake and bread. Fresh, or sweet corn, the kind we like to eat as corn on the cob, was not developed until the 1700s. Before then corn was only used in its dried form.

Along with wheat and rice, corn is one of the world’s major grain crops. It is the largest grain crop grown in the US. About 9 percent of all the corn grown is used to produce food for humans. These foods include corn meal and other food products such as cooking oils, margarine, and corn syrups and sweeteners (fructose). Sixty four percent of all corn grown is used as feed for livestock.

Corn cobs have been used in the manufacturing of nylon fibers and as a source for producing degradable plastics. Ethanol, a renewable fuel made from corn, has shown the possibility of becoming a major renewable fuel for the world’s automotive industry.

Illinois farmers rank second in the country in corn production. Illinois farmers plant over 12,000,000 acres of field corn, which produces over 2 billion bushels of little golden kernels. One bushel of corn weighs 56 pounds, meaning Illinois farmers haul over 112 billion pounds of corn out of their fields.

Corn is pollinated by wind and is typically planted in 30-inch rows. A single seed (or kernel) of corn may produce a plant which yields more than 600 kernels of corn per ear. On one acre of land, any where from 22,000 to 35,000 individual plants may be grown.

Hybrid corn is developed to produce from one to two ears per plant. Ears per plant are often determined by moisture availability. Through better soil conservation practices, fertilizer use, better seed quality, and water availability, corn yields have increased 125 percent since 1950.

Adapted from an activity by Oklahoma Ag in the Classroom Program
Corn Field Math

Vocabulary:

- **Cultivate** - to prepare land for the raising of crop.
- **Domesticated** - adapted to living with human beings and serving their purpose.
- **Ethanol** - a colorless, volatile, pungent liquid made from corn which can be burned as a fuel.
- **Hybrid** - an offspring of parents with different genes especially when of different races, breeds, species, or genera.
- **Maize** - Native American name for corn. Also called Indian corn.
- **Pollinated** - pollen placed on the stigma of a plant for the purpose of creating seeds, flowers and fruit.
- **Porridge** - a soft cereal or meal boiled in water or milk until thick.
- **Silage** - the entire above ground portion of the corn plant (including ear) that is harvested by cutting and chopping the plant before it reaches maturity. It is stored in silos or packed into above-ground pits and used for feed.
- **Soil Conservation** - a protection from loss, waste, etc. of soil through efficient farming methods.
- **Utilitarian** - the quality or property of being useful.

Activity Instructions:

1. Read and discuss the background information and vocabulary.
2. Hand out the worksheet for students to complete.
   - Students will work in pairs or groups to solve math problems
   - Students will check answers after completing the first two before continuing.
   - In class discussion, students will agree or disagree with the reasoning of other classmates and explain their positions.

Lesson Extender:

- Have students create their own problems using the knowledge they have gained through this activity.
- Have students use graph paper to create scale-drawings illustrating each problem.
- Encourage students to check current and future corn prices and then complete the problems using the current or future corn prices.
- Challenge students to complete the problems using other crops in place of corn. Students will need to determine the number of plants in a row for the crop they have chosen, the number of plants per square acre, etc.

Adapted from an activity by Oklahoma Ag in the Classroom Program
Corn Field Math

Use your calculator and other mathematical tools to solve the following problems. Compare your methods with a partner.

1. a) An acre of land is 43,560 sq. ft. How long is one side of a square acre?
   
b) If the rows are 2.5 ft. apart, how many rows are there?
   
c) How many corn plants will be in each row if there are 22,000 plants in a square acre?

2. Each corn plant produces one ear of corn. There are 600 kernels per ear. How many kernels are produced on 1 acre of land?

WAIT: CHECK YOUR ANSWERS TO THE FIRST TWO PROBLEMS BEFORE CONTINUING.

3. There are 135 bushels of corn produced per acre. How many kernels of corn are in a bushel?

4. A farmer has 640 acres planted in corn. How many bushels of corn will this yield if each plant produces two ears?

5. Corn is selling for $2.40 a bushel. Farmer A's plants produce two ears per plant, while Farmer B's plants produce one. Compare their earnings per acre.

6. The yield has increased by 125% or by a factor of 2.25 since 1950. It is 135 bushels today. What was it in 1950? Explain in writing how you completed your answer.

7. The farmer decided to plant his 320 acres in three different varieties of corn. Use graph paper to construct a model of the farmer's land. Label each section, and complete the calculations. Show your work. Discuss your work on this question with a partner or in a cooperative group.
   
a) Variety A produces one ear per plant. The farmer planted 1/3 of his 320 acres in Variety A. How many bushels of corn can he expect from Variety A?
   
b) Variety B produces two ears per plant. The farmer planted half of his 320 acres in Variety B. How many bushels of corn can he expect from Variety B?
   
c) Variety C produces 1.5 ears per plant. The farmer planted the rest of his acreage in Variety C. How many bushels of corn can he expect from Variety C?
   
d) What is the total yield the farmer can expect for the entire 320 acres?
   
e) How much would the farmer receive from the sale of his corn at $2.40 a bushel?

Adapted from an activity by Oklahoma Ag in the Classroom Program
Corn Field Math (answers)

1. a) An acre of land is 43,560 sq. ft. How long is one side of a square acre?
   \[ \sqrt{43,560} = 208.71 \text{ ft per side} \]
   b) If the rows are 2.5 ft. apart, how many rows are there?
   \[ 208.71 \div 2.5 = 83.48 \text{ rows} \]
   c) How many corn plants will be in each row if there are 22,000 plants in a square acre?
   \[ 22,000 \div 83.84 = 263.54 \text{ plants} \]

2. Each corn plant produces one ear of corn. There are 600 kernels per ear. How many kernels are produced on 1 acre of land?
   \[ 22,000 \times 600 = 13,200,000 \text{ kernels} \]

3. There are 135 bushels of corn produced per acre. How many kernels of corn are in a bushel?
   \[ 13,2000,000 \div 135 = 97,777.77 \text{ kernels} \]

4. A farmer has 640 acres planted in corn. How many bushels of corn will this yield if each plant produces two ears?
   \[ 640 \times 135 = 86,400 \times 2 = 172,800 \text{ bushels} \]

5. Corn is selling for $2.40 a bushel. Farmer A’s plants produce two ears per plant, while Farmer B’s plants produce one. Compare their earnings per acre.
   Farmer A: $2.40 \times 270 = $648; Farmer B: $2.40 \times 135 = $324

6. The yield has increased by 125% or by a factor of 2.25 since 1950. It is 135 bushels today. What was it in 1950? Explain in writing how you completed your answer.
   \[ x + (125\%)x = 135; 2.25x = 135; 135 \div 2.25 = 60; x = 60 \]

7. The farmer decided to plant his 320 acres in three different varieties of corn. Use graph paper to construct a model of the farmer’s land. Label each section, and complete the calculations. Show your work. Discuss your work on this question with a partner or in a cooperative group.
   a) Variety A produces one ear per plant. The farmer planted 1/3 of his 320 acres in Variety A. How many bushels of corn can he expect from Variety A?
      \[ 1/3 \times 320 = 106.66 \text{ acres} \times 135 \text{ bushels} = 14,399.1 \text{ bushels} \]
   b) Variety B produces two ears per plant. The farmer planted half of his 320 acres in Variety B. How many bushels of corn can he expect from Variety B?
      \[ 1/2 \times 320 = 160 \text{ acres} \times 270 \text{ bushels} = 43,200 \text{ bushels} \]
   c) Variety C produces 1.5 ears per plant. The farmer planted the rest of his acreage in Variety C. How many bushels of corn can he expect from Variety C?
      \[ 1/6 \times 320 = 53.33 \text{ acres} \times (135 \times 1.5) = 10,799.325 \text{ bushels} \]
   d) What is the total yield the farmer can expect for the entire 320 acres?
      \[ 14,399.1 + 43,200 + 10,799.325 = 68,398.425 \text{ bushels} \]
   e) How much would the farmer receive from the sale of his corn at $2.40 a bushel?
      \[ 68,398.425 \times 2.40 = $164,156.22 \]

Adapted from an activity by Oklahoma Ag in the Classroom Program
Probing Into Plant Parts

Objective:
Students will use a Venn diagram to identify the similarities and differences between trees and other plants. Students will identify various parts of plants to determine which parts people eat. Students will conduct a celery stalk experiment in which they determine the value and use of the stem and how it helps the plant to meet its needs.

Common Core State Standards: CCSS.ELA-Literacy.RI.2.9; RI.2.10; SL.2.1; W.2.7

Next Generation Science Standards: Ecosystems: 2-PS1-2; 2-LS2-1; Structure and Properties of Matter: 2-PS1-1

Suggested Reading Materials:
IAITC’s Seasons and Tree Ag Mag
Red Leaf, Yellow Leaf by Lois Ehlert

What You Will Need:
- Plant and tree part diagram
- Paper
- Apple, celery, carrots, lettuce
- Celery sticks
- Baby food jars (6)
- Food coloring
- Chart paper/white board
- Markers
- Water
- Newspaper
- Paper Towels

Activity Instructions:
1. As a class, discuss what plants need to survive and grow. (soil, air, water, sunlight)
2. Pose the question, “How do plants get what they need to survive?”
3. Show the students the cover of Red Leaf, Yellow Leaf by Lois Ehlert. Students make predictions, set purpose (parts of a tree), and read aloud.
4. Discuss parts of a tree and how they help it to survive. Show students two diagrams—plant parts and tree parts.
5. Make a Venn diagram and have students compare similarities and differences between plant parts and tree parts. Discuss the Venn diagrams created.

Lesson Extender
- After the discussion of plant parts, pass around carrots, celery, lettuce, and an apple. Ask students to notice the similarities and differences between them.
- Create a 4-column chart entitled “Which Part Do We Eat?”
- Students should construct charts at their seats and identify answers: leaf = lettuce, root = carrot, stem = celery, fruit/seed = apple.
- Discuss as a class what each part does to help the plant. (root gets water and food from the soil, etc.)
- Focus on the stem. Ask students what the stem does. If celery is a stem, what would happen if we gave it different colored water? Would it change, stay the same, die?
- Have students draw pictures of what their predictions are about the experiment.
- Have students conduct an experiment by placing food coloring in water and then standing a piece of celery up in the water. Allow students to observe and record the outcomes of the experiment.

Adapted from an activity at Dole.com classroom resources for educators.
Power Seeds

**Objective:** Students will review the two major angiosperm classes and examine the factors needed for seeds to germinate.

**Common Core State Standards:** CCSS.ELA-Literacy.RI.4.3; RI.4.4; RI.4.5; RF.4.3a
Math.Content.4.MD.A.2

**Next Generation Science Standards:** Structure & Properties of Matter: 5-PS1-4

**Suggested Reading Materials:**
IAITC's Corn, Seasons and Soybean Ag Mags
*One Bean* by Anne Rockwell

**Materials:**
- Grass seeds
- Plaster of Paris
- Fine-point permanent marker
- Metric ruler
- Corn seed
- Newspaper
- Paper towel
- Seeds-starting mix
- Spackling Paste
- Trowel
- 30 clear plastic cups
- (9cm tall, 6 cm wide)
- Pea seeds
- Spackling Knife
- Lettuce seeds
- Trowel (9cm tall, 6 cm wide)

**Vocabulary:**
- **Angiosperms** - plants that produce enclosed seeds.
- **Cotyledon** - a seed leaf that stores food for the germinating seedling. It is the first photosynthetic organ of a young seedling.
- **Dicots** - an angiosperm whose seeds have two cotyledons or seed leaves. Most angiosperms are dicots.
- **Monocolpate** - pollen of a plant with only one pore.
- **Monocots** - an angiosperm whose seeds have only one cotyledon or seed leaf.
- **Phloem** - the tissue that conducts food and other dissolved materials throughout the body of a vascular plant.
- **Tricolpate** - pollen of a plant that has three pores.
- **Vascular bundles** - a structure within a stem containing parallel strands of xylem and phloem.
- **Vascular cambium** - the meristematic layer of cells that causes growth in width of a stem or root.
- **Venation** - an arrangement or system of veins
- **Xylem** - the tissue that conducts water and minerals from the roots upward through the plant and helps to support the plant.

**Background Information:**
There are many different types of plants in the world. Most common plants are angiosperms. Plants have the ability to grow through very hard structures. Although they appear fragile to humans, they are actually very powerful organisms. This activity will help to demonstrate just how powerful plants really are.

**Angiosperms** (Division Anthophyta) make up most of the plants on the Earth. Plants such as trees, flowers, fruits, vegetables, and field crops all belong to this division. Altogether there are about 235,000 species of Angiosperms. The division Anthophyta includes two classes; The monocotyledons (monocots) and the dicotyledons (dicots). Monocots and dicots are very similar, except for a few distinguishing characteristics.

### **Dicots**:
- flower parts are usually found in fours or fives
- pollen is **tricolpate** meaning it has three pores
- they have two **cotyledons** which are food leaves in their seeds
- the leaf **venation** is usually netlike
- the primary **vascular bundles** or transport tissues of the stem are found in a ring
- secondary growth with **vascular cambium** is commonly present
- examples are trees, shrubs

### **Monocots**:
- flower parts usually found in threes
- pollen is **monocolpate** with only one pore
- they only have one cotyledon
- the leaf venation is usually parallel
- the primary vascular bundles in the stem have a complex arrangement
- secondary growth with vascular cambium is absent
- examples are grasses, flowers and palms
Power Seeds

Activity Instructions:
1. Because there are so many containers, students can work in groups of two or three. Each group is responsible for bringing their own seeds. About 54 seeds of each type is necessary. The corn and pea seeds must be soaked in water the night before planting.
2. Using the permanent marker, label 6 containers with GRASS. Print the letters near the bottom of the container. Now label 6 containers with LETTUCE, 6 with CORN, and 6 with PEA.
3. Now draw a line around the outside of each labeled container 6 cm up from the bottom.
4. Select three containers of each seed type (3 Grass, 3 Lettuce, 3 Corn, 3 Pea = 12). Label each container with PLASTER OF PARIS just below the seed type. Now select three more containers of each seed type and label them SPACKLING PASTE. Now you should have a total of 24 containers. Separate containers first by seed type and then by covering material (should have 8 groups of 3).
5. Take one container marked PLASTER OF PARIS for each seed category and draw a line 0.5 cm above the 6 cm line. Take another container marked PLASTER OF PARIS for each seed category and draw a line 1.0 cm above the 6 cm line. Take the last 3 containers marked PLASTER OF PARIS and draw a line 1.5 cm above the 6 cm line.
6. Repeat this entire procedure for the containers marked SPACKLING PASTE. Now all the containers should be different by seed type, material, or height of line.
7. Spread out the newspaper to avoid making a mess. Now fill each container with seed starting mix up to the 6 cm line.
8. Plant nine seeds of the proper type in each marked container. Use an X-shaped pattern across the container. Plant the corn and pea seeds about 2 cm deep. The grass and lettuce seeds need to be planted just under the surface.
9. Water the contents of each container.
10. Now mix the covering materials according to the directions. You can buy the covering materials pre-mixed as well.
11. Now use the spackling knife to cover the planted seeds with the appropriate material. Fill the containers to the height of the line above the 6 cm line. Work quickly because some of the coverings harden very quickly. Make sure everything is covered and the materials touch the walls of every container.
12. Set the containers aside for a few days. Then examine each container’s surface for cracks. Take a look at the starting mix to look for root growth. Record all observations for five days.

Notes
- Make sure the containers are watered thoroughly before applying the covering. This is the only source of water the seeds will have for a number of days. In the meantime, too much water could be just as bad.
- It is important that students be as accurate as possible when applying the covering. There is only half a centimeter to work with, so too much or too little could affect the results.
- Timing is very important. It would be a great idea to try to plant everything on Friday. This will allow a growth period over the weekend and then five consecutive days to record results.
- It would be good if all the setting up could be done in one day. However, if time does not permit, then the amount of coverings or seeds can be cut back or the lab can be done in sections.
- There are a number of variations that can be used with this activity. Try using different types of coverings, or different seeds, or maybe even different types of soil.

Questions
1. Which seeds broke through 0.5 cm of Plaster of Paris? What about 1.0 cm? 1.5 cm?
2. Which seeds broke through 0.5 cm of Spackling Paste? 1.0 cm? 1.5 cm?
3. Which seeds showed the greatest amount of root growth?
4. Which seeds showed the least amount of root growth?
5. Are dicotyledonous seedlings stronger than monocotyledonous seedlings? Justify this answer.
6. The larger the seed, the more powerful the seedling. Is this generalization true or false? Explain.