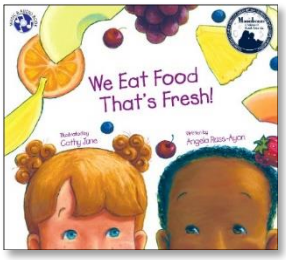
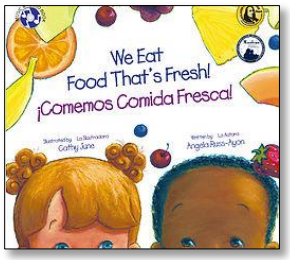




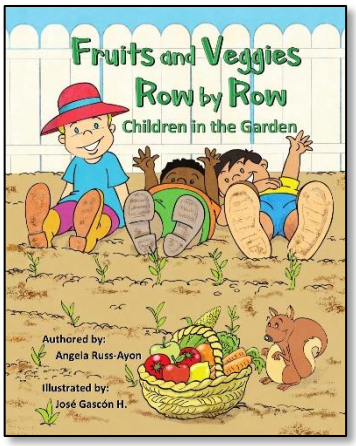
"We Eat Food That's Fresh"

"Comemos Comida Fresca"

"Fruits & Veggies Row by Row"

Picture Books

Authored by Angela Russ-Ayon



STEM Extensions

In addition to the nutrition aspect of this book, there is a STEM component that is well worth sharing. Connecting literature, science, and hands-on discovery helps give children a more concrete understanding of new concepts in and around the kitchen. Compare and contrast the different things you see and do. Follow the interest of the child and offer extensions toward new findings. Here are some helpful tips to help make your experience worthwhile.

- Find books that relate to the activity or experiment you will be doing. Even books for grown-ups have wonderful photographic sequences such as the progression from fresh fruit to decaying fruit, or the process of ice freezing, or how dough rises when you make a fruit pastry.
- Supply blank paper, writing, and drawing implements for children who want to record what they see. Find color and cut activities that tie into what you're doing.
- Create a photo record that can be posted, reviewed, and discussed later.
- Make sure to have some of the following items handy, if they apply: plastic tweezers or tongs, a magnifying glass, plastic examining jars, a ruler, measuring cups, sifters, beakers, funnels, a flashlight, colander, ladle, whisk, hand juicer, garlic press, and other child-safe scientific tools.
- Declutter the work area, so children can focus on what they're doing.
- Allow time for children to observe, experiment, gather data, compare, predict, problem solve, and share their findings.

The simplest science is just a matter of examining a fruit or vegetable:

1. Use your senses to examine real fruits and vegetables.
2. What is the difference between fruits and vegetables?
3. Compare real vs. fake. What do you notice? How can you tell the difference?
4. Compare clean vs. dirty. Why do we clean food before we eat?
5. What do you notice about how the fruit or vegetable grew? Where was the stem attached?
6. Try to identify fruits and vegetables using only the sense of smell, taste, or just by touching and feeling.
7. Measure the fruits and vegetables.
8. Make predictions about what you will find when you slice open or peel fruits or vegetables.
9. Dissect two fruits or vegetables and examine how they differ. What's the difference between slicing and peeling?
10. Slice food horizontally, vertically, and diagonally. What is the difference? Take notice of symmetry, segments, or sections after you slice. How many segments do you see?
11. How do the seeds differ? Notice where the seeds are located. Compare and contrast different types of seeds.

12. Compare whole fruits and vegetables to those that are sliced or separated into sections.
13. Can the fruit or vegetable be squeezed? Juiced? What is the difference between fruits or vegetables that are whole and those that are squeezed?
14. How does one fruit or vegetable compare to others of its kind, or to other fruits and vegetables?
15. Explore varieties of fruits and vegetables. For example, apples come in different varieties: Fuji, Granny Smith, Pippin, Red Delicious, Honey Crisp, Gala, etc. <Alert: Food allergies>
16. Compare the various colors.
17. How do skins, peels, pods, and insides differ? Why is there a skin, peel, or pod on the outside? Scratch surfaces. What do you smell?
18. Examine the fruits, vegetables, and their characteristics:
    a. Space: front | back | top | bottom | sides
    b. Size: big | small | long | short | wide | thin | thick | length | width
    c. Shape: round | oval | star |sphere | circular | curved | angled edges | symmetrical
    d. Colors, including solid or blended
    e. Texture: smooth | rough | spiny | lumpy | ridges | soft | hard
    f. Passage of time: old | new
    g. Condition: broken | bent | holes | defects
    h. Weight: heavy vs. light
19. Sort fruits and vegetables by color or other characteristic
20. Take a picture of the dried seeds, print the picture, and challenge children to match the seeds to the photo or to the fruit or vegetable.
21. Make seed artwork.
22. Taste test. Describe the different flavors such as tart, tangy, bitter, sweet, and sour. Take a poll and make a chart of preferences. Make a fresh salad, wrap, or vegetable soup.
23. Describe the texture. How does it feel in your hand? How does it feel in your mouth?
24. Explore various ways fruits and vegetables can be prepared (raw/fresh, mashed, blended, steamed, baked, boiled, juiced, pureed, dried, chips, combined with other fruits or vegetables, etc.)
25. Investigate different ways of eating fruits and vegetables. For example, lettuce is used in salads, sandwiches, and wraps.
26. Introduce complex vocabulary: aroma, bundle, clean, decay, liquid, pulp, zest, separate, etc.

Temperature

1. Hot vs. cold water: Using the thermometer test the temperature of water: room temperature, left in the shade, left in the sun, taken out of the refrigerator, taken out of the freezer, warmed in the microwave, or chilled with ice.
2. How do fruits or vegetables react when cooked, boiled, frozen, chilled, or heated?
3. Examine ice as a solid, floating & melting in liquid, melting on different surfaces, re-frozen for a short while, and re-frozen back into a solid. What happens when you freeze a vegetable or piece of fruit, with or without the skin/peel/pod?
4. Freeze water with additives such as oil (water is heavier), food-based food coloring, flour, corn meal, paint, sprinkled chalk dust, cake sprinkles, edible food, and more.
5. Add food-based food coloring or liquid watercolor to water before freezing and observe what happens when the ice melts. Notice how the colors change when the liquids mix.
6. Drop liquid paint or food coloring on ice cubes and see what happens.
7. Explore temperature changes using a hair dryer, microwave, heating packs, and ice packs.
8. Freeze ice in different shaped molds.
9. Salt lowers the freezing point of water, which makes it melt faster. Sprinkle salt on ice and observe the result.
10. Using a thin cup, press hands on the outside of the cup and feel warm water vs. cold water.

11. Observe the reaction of superabsorbent polymers, or "growing toys," placed in water. Record the changes in size by tracing around the toy, and then record how much the toy grows after being placed in water. Leave the toy out, and note how it dries and shrinks to its original size.

Life Cycle

1. Review the life-cycle of plants, fruits, and vegetables.
2. Study the roots, stems, stalks, flowers, vines, leaves, and talk about how water gets to the top. Perform a xylem experiment with food-based food coloring.
3. Discuss how plants need sun, water, and care to grow.
4. Plant seeds in soil and grow fruits or vegetables that can be harvested and tasted.
5. Study foods that grow underground and those that grow above ground (on vines, bushes, and trees).
6. Leave fresh food out and examine it as it begins to move through the process of decay. Mark the passage of time on a calendar, and record the progression with pictures or drawings.
7. Plant seeds in baggies or clear plastic containers and watch them grow. Record findings. Take pictures.
8. Place identical plants in the dark vs. in the sun, in sun vs. artificial light, talked to with care or ignored, watering vs not watering, and see how the plants grow differently.
9. Slice fruits and vegetables at different stages of growth and see how they have formed.
10. Examine fruit and vegetable parts under a magnifying glass or microscope. This includes leaves, stems, roots, flowers, petals, thorns, and buds.
11. Dig up a shovel full of soil from outside and let the kids examine it under a magnifying glass or microscope.
12. Collect the insects found in the garden. Note their different characteristics. Examine them and research how they live.

Counting and Fractions

1. Classify, sort, and count different types of fruits and vegetables.
    a. Sort according to color, texture, shape, skin/peel, smell, etc.
2. Estimate how many seeds you will discover inside the food. Slice and count to see if you are correct.
3. Slice toy food or real fruits and vegetables with child-safe utensils, count the pieces and put the food back together. Observe how the various pieces make a whole (fractions). Do pieces of different foods fit together and make a whole piece?
4. Mix up the seeds and sort them according to their characteristics.

Measurement

1. Measure the height, length, width, and circumference of various fruits and vegetables.
2. Prepare foods children can taste by following the directions of a simple recipe (sequence of events) using measuring tools. <Alert: Food allergies>
3. Measure and compare food as solids or liquids using plastic measuring cups, measuring bowls, eye droppers, and syringes.
4. Transfer solid portions or liquids into different sized containers observing how much each container holds.
5. Compare and contrast lengths, widths, and shapes of various foods, roots, stems, and things in the kitchen.
6. Use simple scales to compare weights of fruits and vegetables (parts and whole).
7. Roll out dough. Use different sizes and shapes of cookie cutters to cut real dough or Playdoh.
    - Sort shapes into matching sets.
    - Arrange shapes according to size.
    - Make and extend a pattern.
8. Place whole fruit in a plastic cup of water. Then slice the fruit into thin pieces and place them in the water. Do they float or sink? If you have an ounce scale, weigh the whole fruit and the pieces. Discuss what happened.

Technology

1. Examine the various tools and simple machines used in the kitchen: strainer, measuring cups, lemon squeezer, thermometer, peeler, can opener, whisk, zester, tongs, oven mitts, spatula, slotted spoon, ladle, etc.
    a. Simple machines change the direction of the force we apply
    b. change the strength of the force necessary to do a job
    c. apply force to a place that cannot otherwise be reached
    d. apply force in ways that cannot be done without machines
2. Some tools will fall into several categories depending upon the parts to which you are referring.
    - **Incline Plane:** A plane inclined at an angle to the horizontal. (Baking sheet, spatula)
    - **Wedge:** One thick end, tapering to a thin edge - can be driven between two objects to secure or separate them. (Knife, grater, peeler, scissors)
    - **Lever:** Help lift, move, cut, or break an object using applied pressure (Tongs, can opener, peeler, scissors, fork, nutcracker)
    - **Wheel and Axel:** A wheel on a cylindrical drum. (Can opener, pizza cutter, rolling pin)
    - **Screw:** An object that twists to join things together. (jar)
    - **Pulley & Gears:** A toothed machine part that meshes with another toothed part to transmit motion or to change speed or direction (hand mixer, can opener)
3. Predict how the tools are used. Test your theories.
4. Invent other uses for the tools.
5. Tour a local grocery store to see what technology and engineering can be found: scanners, scales, conveyer belt, freezer, mist sprayer, rolling carts, and register with keypad.

Chemistry

1. Squeeze fresh fruit and make fruit juice for a taste test. <Alert: Food allergies>
2. Combine different juices and compare how they taste. <Alert: Food allergies>
3. Strain juices that have pulp. Sift dry ingredients. What is left over in the strainer/sifter?
4. Fruits and vegetables come in different colors of the rainbow. Mix colors of crayons, chalk, Playdoh, food coloring, etc. and observe the result.
5. Combine small quantities of liquids using an eyedropper or syringe and see what happens: orange juice and water, cold /warm water and honey, apple juice and water. Heavy liquids sink, lighter liquids float, and you can magically “layer” them. What happens when you shake them? Some liquids, once combined, become cloudy, where as some remain clear.
6. Experiment by lining up jars of water and placing different ingredients (flour, sugar, salt, honey, rice, honey, syrup, vitamin, etc.) in the water to see which dissolve and how fast.
7. Do the same with dry goods: dry rice and beans, flour and sugars, rice and flour.
8. Combine liquids with dry goods: different sugars and water, baking soda and vinegar, lemon juice and baking soda. Add water, oil, or vinegar to flour or sugar and see how the individual ingredients react.
9. Fill clear plastic jars with different liquids (oil and water) and see how the ingredients settle. Do they separate or mix together. What if you shake them?
10. Combine baking soda with lemon juice and you get bubbles. Could the bubbles help you blow up the balloon?
11. Let a slice of fruit sit in different temperatures of water, or different types of liquids such as lemon juice or even vinegar, and see what happens. Let pasta sit in cold vs. warm water and observe what will happen when the pasta is added to the vegetable soup. What happens if you leave a slice of avocado in a sealed baggie vs. sealing it in lemon juice?

12. Mash, blend and mix different fruits and vegetables to make shakes, snacks, and dips.
13. Compare flat water vs. carbonated water. Complete some of the above experiments using both types of water.
14. Make invisible ink and draw invisible pictures plain white paper using fresh lemon juice dabbed lightly on Q-tip swabs or a small paintbrush. Let juice dry. To see the picture, hold the paper near a heat source such as a light bulb. The acid in the lemon juice weakens the paper making it more sensitive to heat.
15. Sprinkle baking soda over the top of frozen vinegar cubes and observe the fizzing reaction.

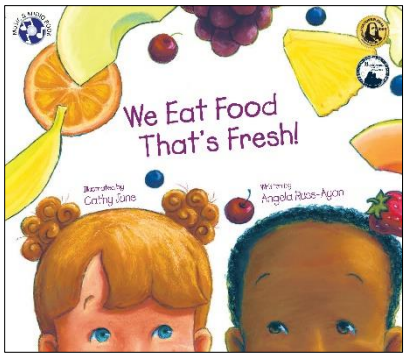
Absorption

1. Soak up water and other liquids with a sponge.
2. Use eye droppers and experiment to see which material absorbs the most water: paper towel, napkin, tissue, fabric rag, wax paper, foil, paper, plastic baggie, wood, sponge, metal, etc. Hold the item over the cup and squeeze to measure the amount of water absorbed. What happens when the water isn't absorbed?
3. Add food coloring to water to help children see the absorption taking place.
4. Since water doesn't absorb into foil. Fold and scrunch the foil. Watch which path the water takes. Create rivers and pools in the foil. How is the path of water different on wax paper? A plastic baggie?
5. Fill jars with water and different colors of food coloring. Red, orange and blue work well. Slice celery stalks at the top and bottom. Place the freshly cut stalks into each jar and examine the process of transpiration as the colored water works its way up the xylem inside the stalks. How much water did each stalk absorb (or drink)? Where does the color appear on the stalks? Does it matter how many leaves the stalk has?

Evaporation

1. When water gets hot, it creates steam. Cover a cup of hot water with a piece of clear plastic and watch the steam form in the cup and on the plastic.
2. Leave a cup of water out (in a sunny window) and continue to measure the level of water as it evaporates over time. Does apple or grape juice evaporate at the same speed?
3. Paint a design on the ground and observe what happens to the water on a cold day vs. a hot day.
4. Paint over a chalk design. How does the design differ?

Feel free to email your STEM experiences with young children in and around the kitchen to **info@abridgeclub.com**. We appreciate your questions, comments or constructive criticism, and we are happy to share your input with others.



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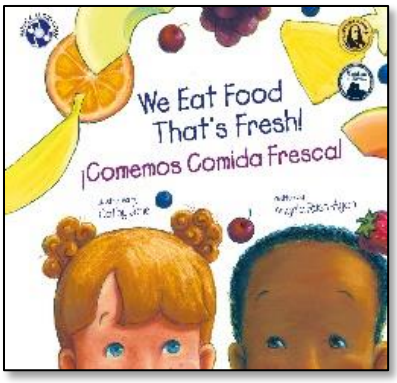

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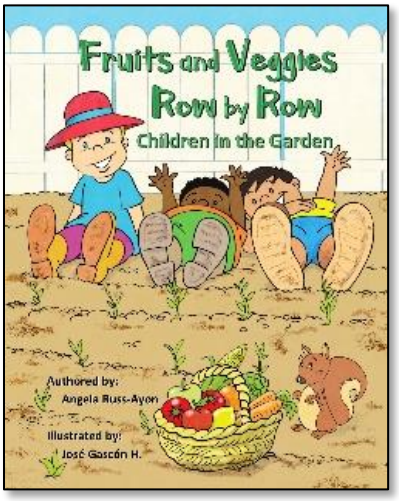

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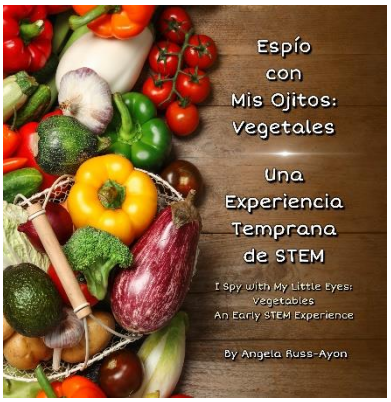

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