Food System Explorers:
A Sensory-Based Curriculum for Kids

Learn
Explore
Grow

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Benefits of Sensory Activity

- Engagement in sensory activity is an important part of healthy child development and lays the foundation for future learning and academic success.\textsuperscript{1,2}

- Sensory activities allow children to explore their surroundings through sight, sound, smell, touch, and taste.

- Through exposure to objects that invite attention, manipulation, and imagination, these activities promote reciprocal interaction with the immediate environment.\textsuperscript{3}

- Engaging children in reciprocal environmental interactions can improve motor skills, cognition, linguistic capabilities, creativity, and social connections.\textsuperscript{2}

- Importantly, sensory activities can satisfy children’s growing informational needs by supporting environmental exploration and understanding.\textsuperscript{4}
Food Systems Explorers: A Sensory-Based Curriculum for Kids

Why sensory-based food education?

- Promoting the intake of healthy, nutritious foods is an important strategy for childhood obesity prevention. However, ensuring that children meet the dietary recommendations is an ongoing challenge.

- By engaging the senses through activities such as tasting a new fruit, chopping vegetables or planting a herb garden, children can gain an appreciation for healthier food choices.

- While this approach has primarily been used to improve children’s dietary preferences, it can also build awareness of the food system.

- Understanding where our food comes from and the impacts food choices have on our bodies and the environment can help develop healthy habits.

- Forming these habits early on can promote well-being and prevent adverse health outcomes later in life.

- Exposure to the natural environment in which food is grown may also promote environmentally responsible behavior in adulthood.

- The aims of this curriculum are to:
  1) Promote exploration of the food environment through garden and food-based sensory activities.
  2) Support children’s informational needs by building understanding and providing opportunities for engagement.
  3) Provide skills needed to navigate the food environment and develop healthy habits.
“Food System Explorers” is a sensory-based food education program that encourages kids to learn about the importance of good nutrition, where their food comes from, and how to promote a sustainable food system.

Each session will begin with an interactive lesson (~15 minutes) and be followed by ‘hands-on’ activities to reinforce the concepts covered.

In “seedy sensations” we will explore how seeds grow into the foods we eat. Kids will create their own seed planters and taste a variety of edible seeds.

In “field to fork” we will follow the path of food as it moves from the farm to your plate. Kids will prepare ‘harvested’ vegetables for a snack and learn how to make bread from milled wheat.

In “barnyard connections” we will learn more about farm animal products and discuss the importance of proper animal care. Kids will practice milking a cow and create a sock animal stuffed with “sheep’s wool”.

In “waste not, want not” we will explore the issue of food waste and discuss ways to reduce waste through composting and recycling. Students will build a soda bottle composter and upcycle used milk cartons into bird feeders.
**Week 1: Seedy Sensations**

**Overview:**

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**Topics:**

- Discuss & explore the parts of a seed and their functions.
- Learn two different ways to sprout seeds indoors.
- Taste a variety of edible seeds and prepare a home-made trail mix.

**Materials:**

**Parts of a Seed**
- Printed labels (seed coat, cotyledon, roots, leaves)
- Clear garbage bag
- Backpack with a snack of pumpkin seeds
- Water bottle with straw
- Green paper hat

**Bean Dissection**
- Soaked lima or kidney beans
- Plastic knife

**Sprouting Sponges**
- Kitchen sponge
- Seed packets (lettuce, spinach)
- Spray bottle
- Plate

**Toilet Roll Planters**
- Toilet paper rolls (or paper towel rolls cut into 3 pieces)
- Wet soil
- Small pebbles
- Seed packets (lettuce, spinach)
- Colorful markers
- Kid-friendly scissors

**Parts of a Seed Lesson**

1. Have one child dress-up as a hiker by putting on the backpack and wearing the clear plastic bag like a poncho. Explain that a hiker is a lot like a seed.

2. The poncho protects the hiker from the wind and rain, much like a seed coat protects a seed.

3. When the weather is nice, the hiker can take off the poncho. Similarly, a seed sheds its coat when the conditions are right for growth.

4. Ask the children what a hiker needs for energy (food!). Pull out the snack from the backpack and explain that seeds also store food in a cotyledon.

5. After a long hike, a hiker gets thirsty and needs water (just like growing seeds do). Pull out the water bottle and note that the straw is like a root.
Week 1: Seedy Sensations

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Bean Dissection

- Discuss the different types of seeds that can be used to grow food or eaten. (Use the Types of Seeds guide)
- Divide into groups of two and give each group 3 or 4 soaked beans.
- Have them rub the beans between their fingers and feel the seed coat fall off.
- Help them carefully cut the seed in half. What do they see inside?
- Ask the kids to note the cotyledon (food storage pouch) and the tiny leaves and root (this is called the embryo)

Parts of a Seed Continued

6. Ask the children what else is useful to have on hot, sunny days (a hat). Put the green hat on the hiker's head and explain that it is like the first leaves of a seedling. These leaves are used to absorb sunlight and make food. This is called photosynthesis.

7. When this happens, the seedling no longer needs the cotyledon for food storage. (Ask the hiker to take off the backpack).

8. Use the Seed Life Cycle guide to review the life cycle of a bean (a type of seed).

*Adapted from Vermont FEED Curriculum

Seedy Trail Mix

Ingredients

- Pumpkin & sunflower seeds (unsalted)
- Cheerios & mini pretzels
- Dried fruit (raisins, cranberries, apricots)
- Mini dark chocolate chips
- Unsalted nuts (peanuts, pistachios, almonds)
- Small ice cream cones

1. Place the trail mix ingredients into separate bowls (except the ice cream cones).
2. Let the kids taste the different nuts, seeds, and crunchy grains. Ask them to describe the flavour and texture of each item. Explain that the cheerios and pretzels are also produced from edible seeds known as a cereals (oats and wheat).
3. Give each child an ice-cream cone and let them choose different ingredients to fill the cone and create their own trail-mix!
**Week 1: Seedy Sensations**

**Sprouting Sponges**

1. Divide up into groups of two and give each group a plate, bowl of water, packet of seeds, and kitchen sponge.
2. Soak each sponge in the bowl and squeeze out any excess water so that the sponge is moist but not dripping.
3. Spread the seeds over the sponge and carefully poke them into the holes.
4. Explain that the seeds will start to sprout directly on the sponge over the next few weeks.
5. Bring over a sprouted sponge to show the kids how the seeds have grown.
6. Let them pull up a few seedlings to feel the roots underneath and touch the leaves on top.

**Toilet Roll Planters**

1. Give each child 2 toilet paper rolls, a pair of kid friendly scissors, a small pebble and markers.
2. Using scissors, cut six to eight small slits in the end of each toilet paper roll.
3. Fold the strips down so they overlap and place a small pebble at the bottom as a seal.
4. Decorate each toilet paper “pot” with markers and stickers (be creative!)
5. Fill each “pot” with wet soil and set on a baking sheet.
6. Plant one seed in per “pot”. Explain that the seeds will start to sprout in the soil. What does soil provide for a plant?
7. Bring over a few sprouted planters and let the kids explore. Make sure to re-plant any seedlings back in the pots so they can continue to grow!
Types of Seeds

Seed Life Cycle
Week 2: Field to Fork

Overview:

- Life Cycle of Food Lesson..... 15min
- Two-Ingredient Bread.......... 20min
- Bottle Greenhouse ............. 15min
- Harvested Fruit Snack......... 10min

Topics:

- Learn about the life cycle of food and trace the path of local crops from farm to plate.
- Turn wheat into bread and build a bottle greenhouse to help plants grow.
- Harvest and taste a variety of fruits.

Materials:

- Life Cycle of Food
  - Life Cycle Pictograph
  - Chart paper
  - Tape & Markers
  - Apple Life Cycle cards

- Two-Ingredient Bread
  - Self-rising flour
  - Greek or natural yogurt
  - “Add-ins” like blueberries, raisins, mini chocolate chips
  - Measuring cups
  - Baking trays
  - Cookie cutters

- Bottle Greenhouse
  - Pumpkin seeds & sunflower seeds
  - Pistachios, peanuts, & almonds
  - Raisins & dried cranberries
  - Cheerios (plain)
  - Mini dark-chocolate chips

Life Cycle of Food Lesson

1. Ask the kids to think about the foods that they typically eat. Where does this food come from?
2. Discuss the different parts of the food life cycle, using the Life Cycle pictograph as a guide.
3. Some of the foods we eat can be grown locally while other are transported to us from other parts of the country or the world. Brainstorm a list of locally grown vs. imported foods as a group.
4. Some of the foods we eat, such as fresh fruits and vegetables, have a simple life cycle. This is because they need very little processing before they are taken to a market or grocery store.
5. Divide the kids into two groups and hand them the apple cards, a piece of chart paper, tape and markers. Explain that New York State is famous for growing apples. Ask them to create the life cycle of apple using the cards and make sure to label each step. The first group to finish wins!
6. Other foods go through multiple processing steps before they get to us. In the next activity, we’ll explore how a grain like wheat gets converted into the bread we eat.
Two-Ingredient Bread

Discussion

1. What steps are needed to turn wheat into bread? Show the kids a stalk of wheat and explain that once the wheat is fully grown, farmers can harvest it from their fields.
2. Next, the harvested wheat grain is dried – why do you think that is? (to prevent spoilage) The dried grains either be stored or sent directly to a mill where they are finely ground into flour.
3. This flour is then used by bakeries to make the bread sold in markets or stores. Alternatively, flour can also be bought for baking at home.

Activity Instructions

1. Divide into groups of four and give each group a baking sheet, two place mats, and a cookie cutter.
2. Measure out 1 cup self-rising flour and 2/3 cup of yogurt.
3. Mix the flour and yogurt together on the place mat until a dough forms. Experiment by kneading, squashing, rolling and flattening the dough (it is very forgiving!).
4. Roll out the dough into small balls or cut out shapes with the cookie cutter and place on the baking tray.
5. Decorate with toppings (raisins, blueberries, chocolate chips, and bake at 350F until golden-brown.

Bottle Greenhouse

Activity Instructions

1. Allow the kids to explore the seeds they planted last week. How much have they grown? What inputs do they need to keep growing? (carbon dioxide, minerals in the soil, water, sunlight)
2. Explain that a greenhouse can help plants grow by creating a warm, moist environment. We will create a simple indoor greenhouse for our seedlings using empty soda bottles.
3. Give each child a soda bottle that has been cut in half.
4. Poke holes in the bottom portion of the bottle and fill it half-way with soil.
5. Create holes in the soil and carefully transfer in the seedlings. Top off with extra soil if needed (to make sure the plants are securely planted)
6. Cut small slits in the top half of the bottle and slide it over the bottom half. Your greenhouse is ready to go!
7. Keep the bottle in a well-lit place and watch your plants grow. You can control the level of moisture inside the bottle by leaving the cap on or off.
Harvested Fruit Snack

Ingredients
- Fruit pieces (apples, berries, bananas)
- Compostable sandwich bags
- Cardboard tree cut-out
- Toothpicks and paper plates

1. Cut up a selection of fruit (e.g. apples, berries, grapes, peaches, bananas) into bite-sized pieces and pack them in compostable sandwich bags.
2. Stick the cardboard tree cut-out on a wall and tape the bags to the tree. Explain that fruits can be harvested from trees, bushes and vines that grow above the ground.
3. Let the kids “harvest” fruits from the tree. Can they identify the different types of fruit? Which ones have they tasted before?
4. Explain that fruits are an excellent source of nutrients like vitamins, minerals, and fiber (helps with digestion).
5. Use the toothpicks to create fruit skewers or fun fruit shapes. Ask the kids how each fruit tastes. Do they have a favorite?
Week 3: Barnyard Connections

Overview:

Farm Animals Lesson......... 15min  
Cow Milking Activity......... 10min  
Sock Wool Sheep............... 20min  
Egg Salad Celery Bites .... 15min

Topics:

- Learn about three farm animals and discuss the nutritional benefits of animal products.
- Understand the importance of farm animal welfare.
- Learn how to milk a cow and uses for other animal products.

Materials:

Farm Animals Lesson
- Flip chart and markers
- Tools for healthy animals infographic

Cow Milking Activity
- Cardboard cut-out of a cow (x3)
- 6 rubber gloves
- 6 plastic buckets or bowls
- Water mixed with white paint (“Milk”)

Sock Wool Sheep
- Old cotton socks
- Elastic bands
- Cotton balls

Farm Animals Lesson

1. People have been raising farm animals for thousands of years. What farm animals have you encountered before? Does your family raise their own animals?

2. Animals are farmed for a variety of reasons: as a direct source of food, an indirect source of food products or other items.

3. Three common farm animals in the US are chickens, cows, and sheep. What important products do these animals give us? Brainstorm a list as a group.

4. In addition to being cultivated for meat, chickens lay eggs, sheep give us wool, and cows provide us with milk. Eggs and dairy products provide a complete source of protein and contain many important vitamins and minerals to help us grow. Can you think of examples? (Calcium, Vitamin D)

5. Proper care practices are an important part of raising farm animals. Many large factory farms keep animals in unclean, crowded spaces that negatively impact their well-being. In addition, high quantities of waste disposed from these facilities can be hazardous to human health.

6. Animals need space to roam, good nutrition and proper medical care, just like we do. What can we do to ensure that animals are cared for? Use the “Tools for Healthy Animals” to facilitate discussion.
Egg Salad Celery Bites

Ingredients

- 5 Hard boiled eggs (chopped)
- Grated carrots
- Greek yogurt
- Dill relish
- Honey Dijon mustard
- Celery stalks (cut into 3 pieces)

1. Explain that eggs are a nutritional power-house and an easy food to prepare for lunch or a snack. They are a complete source of protein and provide a good source of vitamin D (for bone growth), B vitamins (for energy metabolism) and essential minerals.
2. Give each child a plain piece of egg to try. How does it taste?
3. Mix 3 tablespoons of yogurt, 1 tablespoon of mustard and 1 tablespoon of relish in a small bowl.
4. Add in the chopped eggs and ½ cup of grated carrots and stir well.
5. Scoop out a teaspoon of the egg mixture onto each celery piece and serve! (Ask the kids which version of the egg they prefer).
Cow Milking Activity

Discussion

1. Did you know that New York state has the third largest population of dairy cows in the country? Cows can only produce milk after giving birth, so all dairy cows are female.

1. We use this milk to produce several different products (yogurt, cheese butter) and it can be directly pasteurized (exposed to high heat) for us to drink.

1. What are the nutritional benefits of cow’s milk? (calcium, protein, B vitamins) Do they know of any milk alternatives? These options can be important nutrient sources for people with allergies or those who don’t eat animal products.

Activity Instructions

1. Tape the cardboard cow cut-out to the back of a chair and tape a piece of twine so that it hangs below the belly.

2. Fill a rubber with water and lightly tie the twine around the top. Explain that the rubber glove is like the cow’s udder. This is the cow’s mammary gland, or organ in which milk is stored.

3. Carefully poke a tiny hole in two of the gloves’ fingers and place a plastic bucket underneath.

4. Let each child take turns squeezing “milk” out of the udder. Tell them to be gentle as they do so. What does milking feel like?

Sock Wool Sheep

Activity Instructions

1. Give each child a sock, several elastic bands and some cotton balls.

2. Explain that this cotton feels similar to a sheep’s wool. What is wool used for?

3. Full instructions on how to make a sock sheep can be printed from the following site:

   Danielle’s Place of Crafts and Activities:

4. If kids don’t want to create a sheep, they can use the basic sock animal template to make another animal instead 😊
Week 4: Waste Not, Want Not

Overview:

Food Waste Lesson.................. 15min
Soda Bottle Compost............. 15min
Milk Carton Bird Feeder........ 15min
Waste-Free Lunch ............... 15min

Topics:
- Discuss the problem of food waste
- Explore ways to reduce waste using the three “R”s.
- Learn how to turn used food packaging into useful items.
- Prepare a healthy no-waste lunch.

Materials:

Food Waste Lesson
✓ Food Waste fact sheet
✓ Cutting back on Waste! fact sheet

Soda Bottle Compost
✓ 2L plastic soda bottles
✓ Wet soil
✓ Dried leaves, pine needles, twigs
✓ Fruit and veggie scraps

Milk Carton Bird Feeder
✓ Milk cartons
✓ Bamboo skewers
✓ Craft knife
✓ Glue sticks
✓ Construction paper
✓ Markers
✓ Kid-friendly scissors
✓ Seeds, leaves and twigs

Food Waste Lesson

1. Ask the kids what they normally eat for breakfast, lunch, and dinner. What things do they throw away at the end of each meal?

2. About 40% of food in the US is never eaten. Food can be wasted at several points along the food chain: in homes, at restaurants, in grocery stores and on farms. Refer to the Food Waste fact sheet for additional tidbits to share.

3. Food waste also includes packaging material such as plastic bottles, paper cartons and metal cans. Where does all of this waste go? (landfills, incinerators, recycling facilities, compost, environment)

4. Discuss ways to eliminate food waste using the 3 R’s: “reduce”, “reuse” “recycle”. Refer to the Waste-Free fact sheet for tips.
Week 4: Waste Not, Want Not

Soda bottle Composter

Discussion
1. Ask the kids what ingredients they think are needed to make compost. Explain that compost needs four things: brown materials, green materials, air, and water.
2. Brown materials like dried twigs and newspaper are a source of carbon, while green materials like veggie scraps are a source of nitrogen. The bacteria that help ‘decompose’ the compost pile need these two nutrients along with oxygen (from the air) and water to survive and grow.

Activity Instructions
1. Divide into groups of two and give each group a soda bottle (with the top cut-off).
2. Layer the bottom of the soda bottle with dried leaves, twigs and pine needles (this is the ‘brown’ layer).
3. Top with some wet soil and add the fruit and veggie scraps on top (this is the ‘green’ layer).
4. Add in one more brown and green later and top with soil.
5. Sprinkle some water overtop to keep the compost pile moist.
6. Leave the top open so that air can get in and help with the composting process.

Milk Carton Bird Feeder

Activity Instructions
1. Make sure each child has a milk carton, glue stick, and safety-scissors.
2. Cut out a door-shaped opening in the milk carton with a craft knife (Make sure to assist the kids with this step!)
3. Decorate the milk carton using construction paper, markers, and stickers.
4. Poke two bamboo skewers through the milk carton, just below the opening. Make sure the skewers poke out the back of the milk carton to keep the perches secure.
5. Poke two holes at the top of the milk carton and thread a piece of twine through to create a handle.
6. Fill the bottom of the milk cartoon with twigs, leaves and seeds.
7. Hang the milk carton feeder on a nearby tree and wait for the birds to arrive 😊

Waste-Free Lunch
1. Discuss the benefits of waste-free lunches using the following brochure
2. Pick a few items from the “Inspirational Lunch Menus” (http://www.wastefreelunches.org/Resources.htm) and let the kids create their own waste-free lunch!
Food Waste Fact Sheet

40% of food in the US is never eaten

Every day, Americans waste enough food to fill the Rose Bowl (90,000-seat football stadium)

If the US wasted 5% less food, it would be enough to feed 4,000,000 Americans

Wasting food costs us:

- 25% of all freshwater used in the US
- 33 million tons of landfill waste
- $750 million per year to dispose of

How does food get wasted?

**Farms:** 30% of what is harvested never reaches stores due to quality selection and cosmetic standards.

**Restaurants:** supersized portions, extensive menus, lack of employee training to minimize waste

**Homes:** People throw away 30-50% of the food they purchase. Household food waste is due to spoilage, overcooking, plate waste and over-purchasing
Cutting Back on Waste!

**REDUCE**

**Shop Wisely:** Help your parents make a shopping list and plan family meals. Avoid asking for extra things at the store.

**Store food properly:** Freeze fresh produce or leftovers so that they last longer. Make sure to store items in air-tight containers or refrigerate to reduce spoilage.

**REUSE**

**Eat leftovers:** Ask for take-away containers when you eat out. Pack leftover home-made dinners for lunch the next day!

**Cut down on disposables:** Pack your meals and snacks in reusable containers. Ask your parents to items in bulk and portion them out, rather than buying single-servings.

**Donate food:** Take extra non-perishable and unspoiled perishable items to local food banks, soup kitchens, pantries, and shelters.

**RECYCLE**

**Compost:** Start your own compost bin at home. Composting can reduce landfill waste and also recycle nutrients.

**Use recycling bins:** Throw away recyclable packaging into the proper bins, instead of tossing them into the trash.
Cited Sources


Additional Sources

Seedy Sensations


Field to Fork


Barnyard Connection


Waste Not, Want Not

