



Three Part Garden Education Lesson Plan

Inside, Outside, Beyond—Classroom, School Garden, Farm

Garden Curriculum for Pre-K Students of Orfalea Family Children's Center

Preschool Learning Foundations fulfilled:

SOCIAL-EMOTIONAL DEVELOPMENT:

Self

- 2.0: Self-Regulation
 - 2.1: Regulate their attention, thoughts, feelings, and impulses more consistently, although adult guidance is sometimes necessary
 - Children anticipate routines, cooperate with fewer reminders, can focus attention on the task at hand
- 5.0 Initiative in Learning
 - 5.1: Take greater initiative in making new discoveries, identifying new solutions, and persisting in trying to figure things out

Social Interaction

- 2.0: Interaction with Peers
 - 2.1: More actively and intentionally cooperate with each other
 - ...may involve working together in groups to achieve a shared goal or communicating about how to share materials so all can use them
- 3.0: Group Participation
 - 3.1: Participate positively and cooperatively as group members

LANGUAGE AND LITERACY:

Listening and Speaking

- 2.0: Vocabulary Children develop age-appropriate vocabulary

- 2.1: Understand and use an increasing variety and specificity of accepted words for objects, actions, and attributes encountered in both real and symbolic texts

Reading

- 5.0: Literacy Interest and Response: Children demonstrate motivation for a broad range of literacy activities
 - 5.1: Demonstrate, with increasing independence, enjoyment of literacy and literacy-related activities

MATHEMATICS:

Number Sense

- 1.0: Children expand their understanding of numbers and quantities in their everyday environment
 - 1.1: Recite numbers in order to twenty with increasing accuracy

Measurement

- 1.0: Children expand their understanding of comparing, ordering, and measuring objects
 - 1.1: Compare two objects by length, weight, or capacity directly or indirectly

ENGLISH-LANGUAGE DEVELOPMENT:

Listening

- 1.0: Children listen with understanding (focus: requests and directions)
 - 1.2: Respond appropriately to requests involving one step when personally directed by others, which may occur with or without contextual cues
 - 1.3: Follow directions that involve one- or two-step sequence, relying less on contextual cues

Reading

- 1.0: Children demonstrate an appreciation and enjoyment of reading and literature (focus: participate in read-aloud activity)
 - 1.1: Attend to an adult reading a short storybook written in the home language or a storybook written in English if the story has been read in the home language
-

Lesson 1 — Inside

Travelling Seeds

Grade: Pre-K

Time: 1 hour

Season: Any

Where: Inside

Learning Objectives: Students learn about seeds and how seeds move around in nature to help grow food, flowers, trees, and other plants. Students are introduced to the role that birds play as seed dispersers. An appreciation for the importance of seeds might be nurtured. A conceptual understanding of the closed loop system of seed dispersal might also be understood.

Introduction: If we want to travel, we might choose to walk, ride a bike, get in a car or hop on a plane. Like us, seeds also travel. They fly in the wind and travel through water too. Some get carried by animals and insects in their belly, on their skin, in the mud on their feet or in their soft fur. Let's see if we can help seeds move around too!

Key Terms:

Seed: A seed is what a plant grows from! It is a small, but very important object. They come in lots of different shapes and sizes. Inside the seed, a baby plant is waiting to come out! If you plant a seed in soil, it will grow into a new plant with the help of water and sun. Most seeds are covered by a hard outer shell called a seed coat, which helps keep the seeds safe and protected from harm.

Seed disperser: Seed dispersers carry seeds from one plant and take them away so that the seeds can be planted in a new location. Animals, insects, and natural forces like wind and rain can be seed dispersers.

Pollen: Pollen is (usually) a yellow, powdery substance made by plants. A grain of pollen is so tiny that you would need a microscope to view just one clearly. When plants share pollen with each other, they can use the pollen to make seeds.

Pollinator: Pollen is carried away by pollinators, who will share the pollen with other plants. Some common pollinators are bees, butterflies, bats, hummingbirds, and even the wind! Pollinators will usually stop by plants to get nectar, a kind of sweet liquid that bees and butterflies like. While they drink nectar, pollen will get stuck to their feet, and then is brushed off as they fly around different plants.

Sprout: A sprout is a new and small baby plant that comes out of a seed. In time, sprouts will grow bigger and stronger and turn into fruits, vegetables, flowers, and more. Because they are small and weak at first, you must touch them gently.

Sprouting Jar: Seeds are put inside this jar with a screen top. They are soaked with water and then rinsed continuously and cared for until sprouts come out.

Supplies:

- One large sprouting jar
- Cut outs of bird feet. (1 for each student). *see appendix for image options.
- Double sided tape to go on the back of cutouts
- Tongue depressors to stabilize bird feet cutouts. (1 for each student).
- 2 large bowls of organic broccoli seeds
- 2 empty large bowls
- A few different types of seeds:
 - One that travels by wind (dandelion)
 - One that travels by water (coconut)
 - One that travels by being stuck in fur (anything with a sticky or spiky outside)
 - One that travels by being eaten, collected. (fruits with seeds)

- Book (see suggested reading)

Instructions:

1. Before the activity begins, gather students in a circle at their usual gathering spot in the classroom.
2. Ask the students if they know what a seed is.
3. Pass around the many different kinds of seeds, one at a time. Let them explore and take time to see a good variety of seeds and compare them. Is this seed bigger or smaller than that seed? Which one seems heavier? Allow questions and comments.
4. Ask students if they understand how seeds travel.
5. Explain that some seeds travel in different ways. Some are very light and float through the wind (dandelion seeds). Some float on water and travel that way (coconut). And some are very sticky and stick to an animal's foot or fur (burdock). *option: play a matching game with them: Which of these seeds do you think travels in the wind? Which of these seeds do you think gets stuck in animal fur?
6. Explain to them the activity. Birds are amazing at spreading seeds around because they can move around so far and wide by flying. Some birds move seeds by picking up fruits with seeds in them and flying away with the fruit. Birds can also get seeds stuck in the mud on their feet and legs. Tell them that today, they are going to be birds and help move some seeds around to the places they need to be in order to grow...the sprouting jar.

7. Hand each student a cut-out of a particular bird's feet with double-sided tape on the other side. You can also use the tongue depressors to make the cutouts more stable. Best to prepare this prior to the lesson. *option: you can skip the bird cut outs and but velcro on the bottom of socks and have students walk on seeds too.
8. In two corners of the room, there will be bowls with broccoli seeds. In the other two corners there will be two empty bowls to drop off the seeds. A teacher, aide or volunteer will need to hold each bowl in each corner to avoid spillage.
9. Give each student a velcro bird foot. If there is time, have each student in the circle say what kind of bird they are. Have one of the teachers make a clear example of how to move from the bowl of seeds to the drop-off bowl--emphasize not to grab the seeds but to let them stick!
10. Ask students to begin the activity. If it is feasible and safe make it into a race.
11. Then gather back in the circle.
12. Once all the seeds have been dispersed to the empty bowls, teachers will transfer seeds into one large sprouting jar. This can be done in front of students to show them how it's done. Count with the students how many seeds they have helped disperse. Pour water in the jar with seeds and let the seeds do an initial soak.
13. While the seeds are soaking, read a book about seeds and how they travel. See suggested reading list for ideas.
14. After reading the book, dump the water completely from the sprouting jar and set jar somewhere students can see.
15. Be sure to wet and rinse your seeds twice a day in the morning and afternoon. The seeds will need to be soaked for a few minutes and then drained completely. This will need to be done daily for three to five days (take it home with you on weekends until they are ready to plant). *Math option: Create a chart on the wall to document the growth of the sprouts with the students. This will highlight how the seeds change everyday as they begin to sprout.

Suggested Reading:

- "Oh Say Can You Seed" By Dr. Seuss
- "The Carrot Seed" by Ruth Krauss
- "The Magic School Bus Plants Seeds" by Joanna Cole
- "The Reason for a Flower" by Ruth Heller
- "The Tiny Seed" Erin Carle
- "Miss Maple's Seeds" Eliza Wheeler
- "Planting the Wild Garden" Kathryn Galbraith
- "A Seed is Sleepy" Dianna Aston

LESSON 2—Outside (School Garden)

Lesson Title: Seed Journals and Planting Sprouts

Grade: Pre-K

Time: 45 minutes

Season: Any

Where: Outside

Learning Objectives: In this lesson, students learn how to plant sprouted seeds in soil. Students will also learn everything involved in growing a plant: nutrient-rich soil, water, and sun. Learn about seed collection and saving seeds in a seed journal.

Introduction: After a seed sprouts, how do you turn it into a plant? Sprouted seeds are great, but there is much more work to do still. A sprouted seed will need to go into soil, drink water, and feel the sun to grow big and strong and turn into a plant that we can eat. With your help, these sprouts are going to turn into broccoli! Yumm!

Key Terms:

Sprout: A sprout is a new, small baby plant that comes out of a seed. In time, sprouts will grow bigger and stronger and turn into fruits, vegetables, flowers, and more. Because they are small and weak at first, you must touch them gently.

Soil: The nutrient-rich dirt that seeds live in until that seed grows into a strong plant.

Sun: The big hot star in the sky that heats our planet and gives plants the ability to grow strong.

Water: We need water to survive, and so do plants. Different plants need different amounts of water.

Seed journal: A book you in which you can keep your collection of seeds.

Supplies:

- Sprouted broccoli seeds from previous lesson (no later than 5 days after initial sprout)
- Potting soil
- Garden bed or large pot, in which to plant sprout
- Small shovel
- Kid garden gloves (optional)
- Watering cans
- Book (see suggested reading)
- Construction paper multi-colored
- Large bag of different sized and colored seeds (approx. 80 count)

- Glue
- 24 inch long piece of various colored string (enough for each student)
- scissors

Instructions:

1. Gather outside under a tree (if possible) and ask students to recall the previous lesson where they acted like birds and helped the seeds travel. Ask them to remind you what a seed is and why it is important. Did they see the seeds they helped travel (disperse) grow into sprouts?
2. Bring students into the garden space and have teachers, aides, and volunteers help pass out one sprout to each student. Inform the students how delicate the sprout is and that it will kill the seed if they squeeze, pinch, or break the sprout. Bring out extra sprouts in case any sprouts are damaged and you need to replace a student's sprout.
3. While students hold their sprouts, ask them what the sprout needs in order to grow into yummy broccoli. Help them with their answers if they do not say soil, sun, water and the air we breathe out.
4. Have the garden bed or large pot(s) in greenhouse filled with soil for the sprouts to go into the dirt. Tell students to go ahead and dig a small hole to plant their sprout in the soil so that all is covered but the tip of the sprout. The sprouts will need to be planted about 5 inches apart.
5. Then, hand out watering cans and ask the students to water the soil.
6. Gather back together and teach them the following song by having them repeat each stanza after you including the movements:

THE FARMER PLANTS THE SEEDS

The farmer plants the seeds,
[Stoop and pretend to plant seeds]
 The farmer plants the seeds
 Hi, ho, the dairy-o,
 The farmer plants the seeds

The sun comes out to shine
[Make a large circle with arms]
 The sun comes out to shine
 Hi, ho, the dairy-o
 The sun comes out to shine

The rain begins to fall
[Hands flutter up and down]
 The rain begins to fall
 Hi, ho, the dairy-o

The rain begins to fall

The seeds begin to grow
 The seeds begin to grow
[Stand up slowly]
 Hi, ho, the dairy-o
 The seeds begin to grow

The vegetables are here
[Put hands to face in surprise]
 The vegetables are here
 Hi, ho, the dairy-o
 The vegetables are here

The farmer digs them up
[Make digging motions]

The farmer digs them up
Hi, ho, the dairy-o
The farmer digs them up

Now, it's time to eat

[Make eating motions with hands]

Now it's time to eat
Hi, ho, the dairy-o
Now it's time to eat

7. Return to outdoor table to make journals

Instructions for making seed journals

1. Teachers help students fold 3 pieces of stacked construction paper into a journal using a piece of string to hold the journal together at the spine.
2. Provide them with a bowl of varied seeds and glue to spell their name on the cover of their seed journal.
3. Give all students a broccoli seed to be their first seed and assist them in spelling 'broccoli' next to their glued in broccoli seed.
4. Let journals dry



Lesson 3 — Beyond, The Farm

Lesson Title: Garden Scavenger Hunt

Grade: Pre-K

Time: 1 hour

Season: Any

Where: Outside

Learning Objectives: Students learn details about the different ways in which seeds disperse by interacting with an "Expert" farmer. Students get a hands on child-driven experience by

going on a garden scavenger hunt. They will learn a new way to prepare broccoli. There are also learning objectives for parents as well: parents will learn a new way their child would like to eat broccoli.

Introduction: When we visit the Farmer she will tell us all about seeds and even give us a new way to prepare broccoli at home with our family. You might even find a seed or two to take home with you and glue into your seed journal!

Key Terms:

Farmer: The person who grows food for the community.

Harvest: When plants like fruits and vegetables are all grown and ready to eat, farmers will harvest them. Some fruits are harvested by picking them off of trees and bushes, while some vegetables are harvested by taking them out of the soil. Afterwards, farmers will gather their newly harvested crops together and send them to grocery stores or farmer's markets for us to buy and eat. When you harvest your own food, however, you can eat them on the spot! Just be sure to wash it first.

Recipe: A recipe gives you directions on how to cook and prepare a yummy meal using a variety of ingredients. Some recipes are simple and only require a few ingredients (some include vegetables like broccoli) and steps. Other recipes are more complicated, and you might need some help from an adult. But no matter how easy or difficult the recipe is, the end result is delicious!

Broccoli: A vegetable that looks like a mini tree, tastes great and is very nutritious (see appendix for broccoli fun facts).

Supplies:

- Broccoli (sometimes the farm you visit will have enough to give each student a few broccoli florets. You may ask a local food co-op to donate broccoli to your class).
- Broccoli recipes printed out and cut into single recipes (see appendix)
- Garden Scavenger Hunt sheet printed out (see appendix)
- Stapler
- Marker
- Brown lunch bags (enough for each student)
- Clear ziplock bags (enough for each student)
- Bug collecting containers (enough for each group)

1. Arrive at farm. Teachers introduce themselves and their classroom name.
2. Listen to Farmer as they explain to students how seeds disperse (Farmer, see Information Sheet for Farmer in the appendix for more details)

3. Farmer says to the students: **“Look around you, all of this here started out as seeds and is now a great big garden!”** Farmer continues to tell students that today they are going to have a scavenger hunt to explore the great big garden and maybe even find some seeds! *(Be sure to take a look around ahead of time to see if you can make any recommendations about where groups will find seeds. Also, please keep in mind that at GHGP we cannot collect seeds from plots that are being rented by other gardeners. Try and take from communal plants such as fruit trees and weeds between plots.)*
4. If teachers do not mention it, remind students that they can use their clear bags to collect seeds they find and put them in their seed journals later.
5. Teachers or ed minors will break the classroom into groups. 1 adult to 3 students. Farmers may need to prompt the teachers to do this.
6. Farmer will explain to group his/her call that calls them back (a wolf cry for example). Each farmer will have their own call.
7. Each adult group leader is handed a printout of the scavenger hunt. Adult then follows instructions on the hand out.
8. After ~15 minutes Farmer will use their call to bring groups back.
9. Farmer asks the students to go around and share something they saw, found, learned, loved, etc.
10. Farmer then segues to what he/she loves...broccoli! Farmer explains that they have just harvested some broccoli and would like to share it with the students because it is the yummiest of all veggies! But first, they need to decide how to prepare the broccoli.
11. In each group, adults will summarize to the kids each of the different recipes and have each student elect which one sounds the yummiest to them.
12. The adult will then staple the recipe chosen by the student to their bag, and write the student’s name on the bag.
13. Each group will be randomly called up by the Farmer to “harvest” a piece of broccoli to take home.
14. Once the bags are filled with broccoli and the students have their recipes, ask the students to sing the farmer song from Lesson 2 to the Farmer.
15. Thank the Farmer and return back to school.

Appendix:

Broccoli Fun Facts:

- While the US enjoys their broccoli (with the average American eating over 4 pounds a year), according to the National Agricultural Statistics Service, USDA, the US is only the third largest producer worldwide. China, producing over 8 million tons a year, comes in at the number 1 spot.
- Although it may be known as the "Golden State", California produces 90% of our nation's broccoli. Perhaps we should rename California as the "broccoli state."
- Broccoli contains the flavonoid kaempferol. Kaempferol is an anti-inflammatory, helps fight against cancer and heart disease, and has been shown to be preventative in adult diabetes onset.
- Broccoli originated in Italy off of the Mediterranean. It has been eaten there since the time of the ancient Romans in 6th Century BC.
- Want something high in Vitamin C but don't feel like eating fruit? Broccoli is very high in Vitamin C, making 1 cup of chopped broccoli the vitamin C equivalent of an orange. One cup of raw chopped broccoli will give you your entire daily needed intake.
- Broccoli is also very high in Vitamin A. Vitamin A helps fight cancer within your cells, as well as keep your eyes healthy and stave off glaucoma and other eye degenerative diseases. It also helps to promote healthy skin, breakdown urinary stones (a big issue with the summer heat and dehydration) and maintain healthy bones and teeth.
- Broccoli is high in fiber. Not only soluble fiber, but insoluble as well. Since your body needs both types, it's great to know that broccoli is can fulfill both your needs.

Garden Scavenger Hunt:

Break students up into small groups— one adult to every three students.



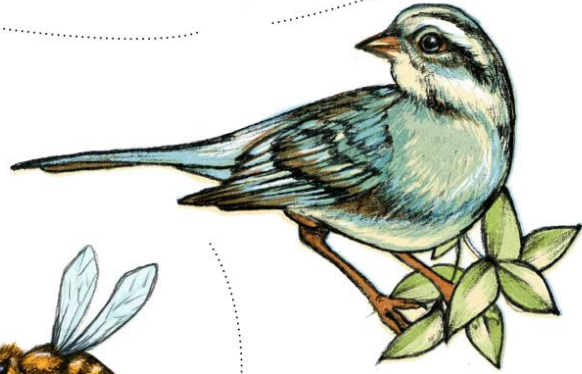
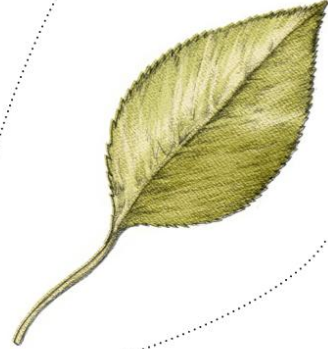
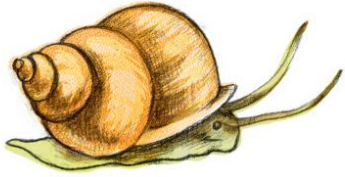
Before you begin please read the following rhyme aloud to students:

*Explore this garden if you please
Together, we can learn with ease!
As a team please walk around
Be sure to look down at the ground!
The garden is a special place,
It brings a smile to our face!
It makes us happy we could dance
Be careful not to hurt the plants!*

- 1) Find a tree to hug
- 2) Wave to a bird, butterfly or bee.
- 3) Point to something you can eat for (breakfast, lunch, dinner). What is it?
- 4) Locate something green (do not harvest). What is it?
- 5) Find a vegetable (do not harvest). What is it?
- 6) Find a snail or worm. (use your bug collecting container, release before leaving)
- 7) Find something you have never seen before. What do you think it is?
- 8) Find a large seed. (ask an adult whether you can collect it)
- 9) Find a small seed. (ask an adult whether you can collect it)
- 10) Find a smooth rock.
- 11) Find a yellow flower (do not pick it). What is it?
- 12) Find something that smells good. What does it smell like?
- 13) Find an animal's track.

IN THE GARDEN

{ scavenger hunt }



How Seeds Travel

by the wind



milkweed



dandelion



maple

by animals



beggar-ticks



sandbur



blackberry

by water

lotus



cattail



coconut

by bursting

violet



jewelweed



witch hazel

by humans



bean



wheat



cherry

Broccoli Recipes:

Sweet No-Chop Broccoli (vegetarian):

Ingredients

- 4 cups broccoli slaw
- 1 apple, chopped
- ½ cup pineapple tidbits
- ¼ cup pecans
- ¼ cup dried cranberries

Dressing

- ⅓ cup light mayo
- ¼ cup pineapple juice
- Dash of salt
- 2 tsp poppy seeds

Instructions

1. Combine the dressing ingredients and whisk until smooth.
2. Combine the broccoli slaw, apple, and pineapple.
3. Pour dressing over salad.
4. Top with pecans and cranberries.
5. Chill before serving.

Broccoli Pesto Pasta (vegan, dairy free):

Ingredients

- 4 cups broccoli florets
- ¾ cup raw cashews
- 1 tbsp lemon juice
- 2 cloves of garlic
- 2 tbsp nutritional yeast
- 1 cup basil or mint leaves, tightly packed
- 1 tsp red pepper flakes
- 3 tbsp olive oil
- Salt and ground black pepper to taste

Instructions

- Steam or boil broccoli florets for 3-5 minutes
- Put the cashews, lemon juice, garlic cloves, and nutritional yeast in a food processor and mix well.
- Add the broccoli florets, basil leaves, red pepper flakes, olive oil, black pepper, and salt. Pulse until smooth.
- Serve the broccoli pesto over pasta of your choice.

Broccoli Brown Rice Casserole (vegan):*Ingredients*

- 1 large head of broccoli cut into florets
- 2 tbsp extra virgin olive oil
- 1/3 cup yellow onion, chopped
- 1 green bell pepper, chopped
- 3 cups cooked brown rice
- 1 container round of vegan jack cheese, cut into cubes
- 1 tsp sea salt
- 1/3 teaspoon pepper

Instructions

1. Lightly oil a 9x9 baking dish.
2. Steam the broccoli florets for 10 minutes and set aside.
3. Heat the oil in a skillet and add the onion and bell pepper.
4. Cook for about 10 to 15 minutes or until the onion is translucent.
5. Turn off the heat in the skillet and stir in the cooked rice, broccoli, cheese, salt, and pepper.
6. Turn all into the prepared casserole.
7. Bake at 350F for 20 minutes.

Vegan Broccoli and Cauliflower Bisque:*Ingredients*

- 1 cup diced onion
- 2 stalks diced celery
- 3 cloves diced garlic
- 8 tsp soy oil
- 8 tsp unbleached flour
- 1/2 gallon soy milk
- 3 cups vegetable stock
- 4 large Yukon gold potatoes, diced
- 1 head broccoli florets
- 1 head cauliflower florets
- 1 tbsp rosemary
- 1 tsp sage
- Salt and pepper to taste

Instructions

1. In a soup pot, saute the onion and celery until translucent. Add the garlic and saute for 1 minute, then add the oil and flour and saute for 1 more minute.
2. Slowly add the soy milk and vegetable stock, whisking continuously. Add enough stock to reach the desired thickness.
3. Add the potatoes, bring to a boil, reduce the heat, and simmer.
4. Add the broccoli and cauliflower florets, rosemary, sage, and salt and pepper to taste. Cook until the florets are tender.
5. Garnish with parsley and serve

Broccoli and Potato Pancakes (vegetarian, contains egg):

Ingredients

- 2 Yukon potatoes, washed and cut into 2 inch chunks
- 2 cups shredded raw broccoli
- 2 eggs
- ½ tsp salt
- ⅓ cp finely diced onions
- ½ tbsp thyme diced
- ½ tsp marjoram leaves diced
- Olive oil as needed
- ¼ grated Parmesan

Instructions

1. Put potatoes into a medium saucepan. Fill halfway with cold water, add salt, and bring to a boil.
2. Simmer the potatoes for about 6 minutes and take them out when tender and easily pierced with a fork.
3. Mash the potatoes in a bowl and add the shredded broccoli, eggs, onion, salt, and herbs. Stir everything together.
4. Heat a large skillet over medium-high heat. Add a tablespoon of olive oil. Make sure the pan is as hot as can be without smoking.
5. Roll ¼ cup of the potato broccoli mixture into a ball, flatten into a disc, and fry, about 4-5 minutes a side.
6. Remove the cakes from heat, sprinkle with Parmesan, and keep in a warm oven until ready to serve.

Vegan Broccoli Balls (vegan):

Ingredients

- 1 tsp oil
- ½ cup finely chopped onion
- 1 large head of broccoli
- 2 tbsp fresh basil leaves, or 1 tsp dried basil
- ½ tsp dried oregano
- ½ tsp garlic
- ½ tsp chipotle pepper
- ¼ tsp ground black pepper
- ¼ tsp salt
- 1 tbsp or more nutritional yeast
- ¼ cup almond meal
- ¼ cup or more bread crumbs
- 1 chia seed egg (1 tbsp chia seeds chia seed meal mixed with 3 tbsp warm water, let sit for 2 minutes to gel)
- ¼ cup vegan cheese shreds (optional)

Instructions

1. Heat oil in a pan over medium heat. Add onions and cook for 3 to 4 minutes.
2. Pulse the broccoli and basil in a food processor until grated. Add to the pan (2.5 to 3 cups grated).
3. Add a dash of salt, then mix and cook for 3 to 4 minutes to dry out excess moisture (if the broccoli is dry, cook for only a minute). Take off heat.
4. Add in the spices, almond meal, and bread crumbs. Mix well. Make the chia seed egg, or use 1 flax egg (1 tbsp flaxseed meal + 2.5 tbsp warm water), or an egg replacer. Mix in.
5. Add vegan cheese shreds (optional), and add more breadcrumbs if needed.
6. Shape the mixture into balls. Place on parchment-lined baking sheet.
7. Preheat the oven to 400F.
8. Bake for a total of 20 to 25 minutes or until crisp and golden on the outside.
9. Serve warm with marinara or over spaghetti or as veggie balls in a sub sandwich.

Broccoli-Cheese Muffins:

Preparation Time: 12 minutes

Cooking Time: 10 minutes

Servings: 12

Ingredients

- 1½ cups Original Bisquick mix
- ½ cup whole milk
- 3 tbsp vegetable oil
- 1 large egg
- ½ cup broccoli cuts, steamed until slightly tender, drained and finely chopped
- 1 cup shredded sharp cheddar cheese (4 oz)
- ¼ tsp onion powder

Instructions

1. Heat oven to 400F. Spray 12 cup muffin pan with cooking spray.
2. In large bowl, stir together Bisquick mix, milk, oil, and egg.
3. Stir in broccoli, cheese, and onion powder until just combined. Spoon mixture evenly into prepared muffin cups.
4. Bake 8-10 minutes or until golden brown. Cool 5 minutes; remove from pans. Serve warm.

Zesty Roasted Broccoli (vegetarian, vegan):

Preparation Time: 8 minutes

Cooking Time: 25 minutes

Servings: 4

Ingredients

- 1 bunch broccoli (about 7 cups)
- 2 tbsp olive oil
- ¼ tsp salt
- ¼ tsp pepper
- 1 tbsp grated lemon zest

Instructions

1. Preheat oven to 425F. Toss broccoli with oil on a baking sheet and season with salt and pepper.
2. Roast for 12-15 minutes, stirring once, or until tender and lightly browned. Sprinkle with lemon zest and toss gently to combine. Enjoy warm or cold.

Information Sheet for Farmer:

If you are reading this, you are a farmer or gardener that has agreed to share your knowledge and enthusiasm about gardening to the visiting preschool classes.

As you are well aware, seeds play a crucial role in our lives. This message of seeds' importance is one of the learning objectives of this lesson. Your role as an "Expert" means you know and understand the importance of seeds very well and are here to help the students see that importance too! You also represent an archetype that is subconsciously important. For the students, it is amazing to learn that a person has dedicated their life to helping plants grow and feeding the community.



Step One:

Before the students arrive clean any paths of debris or hoses and take off the lids of any beds you wish to display. At 10:15 you will meet them at the entrance and welcome them warmly and enthusiastically to the garden. Introduce yourself as a farmer, giving them your name as "Farmer Mary", for example. Speak loudly and slowly so ELL's (English Language Learners) have a better chance of understanding you. If the teachers do not introduce themselves ask them to so you know who to defer to. After a warm welcome, you will remind them of the safety rules:

- 1) Look around you while walking, especially the ground, so you do not trip over anything.
- 2) Do not pick or grab any plants growing unless an adult has told you to.
- 3) Do not eat anything or put anything in your mouth unless an adult tells you to.
- 4) Do not wander off as some areas are off limits.

Step Two:

Guide students to the gathering space where they can sit (or stand depending on weather) in a circle and focus on you. You will have a variety of seeds on-hand to display the different dispersal functions of particular seeds. You can tell the students that a seed wants to move around to be sure of its success. Feel free to structure this in question form. For instance, "how do you suppose this plant spreads its seeds?" This will be the second time the students have learned about seed dispersal so give them a chance to show you what they know.

- a. A dandelion seed or something like it can be used to show how **wind** helps seeds move.
- b. A coconut that floats can be used to show how **water** helps the seed inside disperse to a new place.
- c. A burdock seed or a different sticky seed can be used to show how animal fur (on a bear for example) can help a seed move around.
- d. A cut open apple can be used to show how a bird might eat an apple and poop out the seeds in a different location.

Step Three:

Follow steps 3-11 in lesson plan.

If you have never worked with children here are some helpful tips:

- Preschool children are ages 3-5. Most of them cannot yet read or write. There are usually a few that can, however.
- Students this age thrive when they get to do hands-on, child-driven activities that focus on play and social interactions.
- They are much smarter and more aware than most adults might think.
- Trust that learning is taking place and try not to control everything. Just being outside is a learning experience for them.
- Learning at this age is not about the end result as much as the process.
- If things in the lesson do not run as smoothly as you would have liked, relax. It is very important that students this age deal with conflict or risk as they offer fantastic opportunities for growth.
- If a student gets frustrated and cries it is likely that it has nothing to do with you. Do not take it personally and just defer to teachers with how to handle it.
- If something goes wrong stay calm.

Additional Information about Seed Dispersal:

Botanists generally classify methods of moving seeds as **dispersal by wind** (anemochory), **dispersal by water** (hydrochory), and **dispersal by animals** (zoochory). Dispersal by animals is further divided into **internal seed transportation** (endozoochory), which is what happens when animals swallow fruit and seeds, and **external seed transportation** (epizoochory), when plant burrs use hooks, barbs, or spines to stick to the outsides of their animal transportation.

References:

<http://www.mindbodygreen.com/0-6039/10-Fun-Facts-You-May-Not-Know-About-Broccoli.html>

<http://www.tasteofhome.com/recipes/easy-broccoli-salad>

<http://www.tablespoon.com/recipes/broccoli-cheese-muffins/64e2f5a0-5b6b-47d1-b1a2-2382c1f3daa5>

<http://www.todayparent.com/recipe/vegetarian/broccoli-cheddar-soup-recipe/>

<http://www.todayparent.com/recipe/vegetarian/zesty-roasted-broccoli/>

<http://askanaturalist.com/what-is-this-burr-sticking-to-my-shirt/>

<http://www.superhealthykids.com/sweet-no-chop-broccoli-slaw/>

<http://www.onegreenplanet.org/vegan-recipe/broccoli-pesto-pasta/>

<http://veganinthefreezer.com/broccoli-brown-rice-casserole/>

<http://www.peta.org/recipes/vegan-broccoli-cauliflower-bisque/>

<https://www.babble.com/best-recipes/broccoli-and-potato-pancakes/>

<http://www.veganricha.com/2016/01/vegan-broccoli-balls.html>

<http://www.tablespoon.com/recipes/broccoli-cheese-muffins/64e2f5a0-5b6b-47d1-b1a2-2382c1f3daa5>

<http://www.todayparent.com/recipe/vegetarian/zesty-roasted-broccoli/>

More songs:

<http://www.canteach.ca/elementary/songspoems22.html>

<http://www.preschooleducation.com/sgarden.shtml>

Images: Bird Feet

