



Everyone Grows: Adaptive Strategies for Inclusive Youth Gardening

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About KidsGardening

For more than 40 years, KidsGardening has led the youth gardening movement by creating opportunities for kids to play, learn, and grow through gardening. The national nonprofit provides grant funding, inspiration, community connections, and original educational resources to reach nearly 3 million kids each year. Learn more at [KidsGardening.org](https://www.kidsgardening.org).

About the Author

Riley Carpenter recently graduated from Western Michigan University with a Doctor of Occupational Therapy. Her doctoral capstone project aims to increase individuals' access to and participation in nature-based activities to support health and well-being. As part of her capstone in partnership with KidsGardening, Riley created this resource to provide modifications that make gardening activities more accessible. She is passionate about advocating for the many benefits of nature for physical, emotional, and mental well-being, and personally enjoys outdoor activities like hiking and gardening.

Introduction



How to Think Like an OT When Gardening with Kids

Occupational therapists (OT) are highly trained professionals who help people of all ages participate in daily activities that are meaningful and important to them. OTs are skilled in recommending adaptive tools, evidence-based strategies, and unique modifications to help people engage in the activities they want or need to do. For children, this includes basic self-care, play, socialization, and learning.

To do this effectively, OTs must look at the whole picture, including the person, their environment, and the many different elements of the desired task. For example, if a child is having trouble with the steps needed to get set up for lunch, OTs become very curious about why the child is struggling. What is it about this task that is not working? Is the cafeteria set up so that it is difficult to navigate to find a table? Are containers or bags tricky to open? Is the lunchroom too noisy or stressful to concentrate on setting up for lunch? OTs consider all factors that may be preventing success and then make skilled recommendations about how to help them practice and master daily tasks so they feel confident completing them independently.

Gardening is one of the many activities OTs can use to help build skills. For this guide, we looked at 11 gardening activities through this same lens of curiosity and skill, and we encourage you to do the same when working with young gardeners. If a learner has trouble with any of these activities, become curious about why and how you can help the child be successful.



This resource was created by Western Michigan University occupational therapy student Riley Carpenter, who is passionate about increasing participation in and access to gardening for everyone! Our resource guides you through general suggestions for various needs, though these may prompt you to think of other ways you can help young gardeners. Some common modifications you can use to help children when gardening include dividing tasks into many steps and doing them over a few days instead of in one day, incorporating movement or rest breaks during activities, and providing helpful cues or hints verbally or through pictures and written directions. Other children may benefit from equipment that makes activities easier, such as gloves or gardening tools with different handle types.

Every garden activity and learner is wonderfully unique, and there are many different ways to help someone participate in activities. We encourage you to “think like an OT” when working with young gardeners, considering the task, the environment, and the gardeners themselves. Looking at the whole picture can help you be confident in selecting the right modifications and be creative in coming up with your own ideas. And finally, be sure to check in with learners to see whether the modifications are helpful and, if not, to determine what would be more beneficial. We hope you find this information in this resource helpful and useful. **Happy gardening!**



An OT's Top 10 Teaching Tips for Gardening with Children



- 1. Get to know your young gardeners.** Learn about their skills and needs before planning and implementing your garden activities. On gardening days, be prepared with the necessary accommodations to ensure the garden is accessible to all. While in the garden, make it a priority to acknowledge children's efforts and strengths. Encourage friends and classmates to support each other as well.
- 2. Set expectations and safety rules before going to the garden.** Talk with children about their job(s) in the garden, the importance of sharing and taking turns, taking good care of the plants, and what it means to be safe when working with gardening tools, especially when they are around peers.
- 3. Provide timelines.** Timelines that facilitate a sense of predictability help children know what to expect from the activity. Before starting the activity, explain to children, "We are going to be weeding for 30 minutes today" or "Today we will spend 15 minutes gardening, and then we will move to the next activity." You can also create signs to share with children that display the countdown to "10 minutes," "5 minutes," etc.
- 4. Create visual schedules.** For activities with many steps, create pictures and visual schedules so children can see how the activity will progress. A visual schedule uses very simple pictures arranged in the same order as the written steps of the task. The intention of a visual schedule is to support children in understanding and completing the steps of an activity. A visual schedule can also help children stay focused and attentive, and ensure each step is completed in the correct order.
- 5. Present multisensory cues.** With the goal of supporting independence, present multisensory cues as needed during gardening activities. Start by providing indirect cues first, then increasingly direct cues as needed. For example, an indirect cue would be to ask a question like "What's the next step?" then pause to give the youth time to consider. If more support is needed, then offer a visual cue, such as pointing, to guide their attention to the task at hand. After a pause, if needed, follow up with a directable cue such as "water the plant." Lastly, if necessary, provide a tactile/hand-over-hand cue (lightly guiding a child's hand with your hand around theirs). This sequence helps to facilitate the best level of success possible, while honoring children where they are.

6. **Get to the point!** To avoid creating confusion, provide simple verbal cues with as few words as possible. Avoid filler words, including “like”, “um”, “uh”, and skip transitional phrases like “now you should,” or “next we will.” A straightforward, easy-to-follow cue is, “Scoop soil into the pot.”
7. **Avoid rushing children** and strive to build extra time into the day for gardening activities. Children may progress through the garden activities at different rates, so plan additional activities or garden stations that can be completed independently for those who may finish faster or lose interest more quickly, or recruit attentional support if needed.
8. **Utilize timers.** Visual and auditory timers can help with transitions between activities. You can set a timer on your phone, use a digital kitchen timer, or project a digital countdown on the classroom whiteboard if your gardening activity is taking place indoors. Visual countdowns and timer notifications help children prepare for the end of an activity and make it feel less unexpected.
9. **Minimize distractions.** Try to reduce or, if possible, eliminate distractions in the garden environment such as loud noises, harsh lighting, or strong smells. Remove any garden hazards. Provide space for breaks, such as shaded seating areas, if needed. Make sure your garden is a safe and accessible space.
10. **Encourage children to be curious and make mistakes.** This is how they will learn! Remember, the garden should be an engaging space for joy and learning.



Therapeutic Gardening Skills Word Bank



Physical: Skills that involve movements of your body to do a task

- **Balance:** Ability to maintain your body in an upright position during physical tasks
- **Bilateral coordination:** Using both hands together to complete a task
- **Co-contraction:** When both muscles around a joint are activated to keep the body or body parts steady during a task
- **Coordination:** When all your body parts work together in a smooth way to complete a task efficiently
- **Digit opposition:** The ability to individually touch the tips of each of your fingers to the tip of your thumb, facilitating skills like pinching and manipulating small objects
- **Fine motor skills:** Small movements of the hands and fingers, like writing, pinching, and buttoning
- **Grip strength:** Ability to hold objects of different weights in your hand and then use them for activities
- **Gross motor skills:** Large movements of the body like walking, jumping, skipping, and throwing
- **Gross strength:** The ability to apply the necessary force to complete a task using large muscle groups, like opening a heavy door, pushing a wheelbarrow, or carrying a watering can
- **Hand-eye coordination:** Using your hands and eyes together to accomplish a task
- **In-hand manipulation:** Ability to move an object around in one hand without using the other hand or another object to help do the task
- **Motor planning:** The ability to plan out, prepare for, and execute skilled or novel movements
- **Range of motion:** The ability to move your body parts in different directions to complete tasks
- **Visual perceptual skills:** The brain's ability to interpret visual information and combine it with thinking skills to accomplish tasks
- **Visual skills:** Using your eyes to help you navigate around your environment

Cognitive: Skills that involve your brain and thinking skills

- **Attention:** Maintaining focus on a specific task
- **Compare and contrast:** Making objective and subjective observations of 2 or more things to identify their differences and similarities
- **Executive functioning:** Involves many higher-level cognitive skills that help you successfully complete everyday tasks, including skills like planning, problem solving, attention, memory, and more
- **Inhibition:** The ability to stop yourself from doing something that is no longer necessary
- **Memory:** Recalling previously learned information to help accomplish a task
- **Planning:** Thinking ahead to decide what steps or actions are necessary to complete a task
- **Problem solving:** Thinking about and implementing different ways to address an issue and accomplish a task
- **Sequencing:** Thinking through and completing the steps of a task in an effective order

Sensory: Skills that involve how your body and brain interact with the environment

- Basic/External senses
 - **Auditory:** Hearing
 - **Visual:** Seeing
 - **Olfactory:** Smelling
 - **Tactile:** Touching
 - **Gustatory:** Tasting
- Internal senses
 - **Vestibular:** Contributes to your sense of balance
 - **Proprioception:** Knowing where your body is in space
 - **Interoception:** Receives cues from inside your body on what you're feeling
- **Sensory avoiding:** When it is difficult and overwhelming for a person to tolerate very much sensory input
- **Sensory craving:** When it is difficult for a person to get enough sensory input to be able to focus and participate in daily activities
- **Sensory integration/Sensory processing:** The brain's ability to perceive, process, and generate responses to sensory information from outside and inside our bodies
- **Sensory regulation:** Achieving a calm emotional state using strategies to manage sensory interactions with the environment

Social/Emotional: Skills that involve feelings or interactions with other people

- **Communication:** Expressing yourself to others, making your needs known to others
- **Creativity:** Ability to generate and carry out unique ideas and plans
- **Emotional regulation:** Strategies that help you manage your emotions
- **Patience:** Ability to persevere through prolonged delays or issues while maintaining a sense of calmness
- **Perseverance:** Ability to see a difficult task through to completion even when facing obstacles
- **Resilience:** Ability to recover from and adjust to adversity and obstacles
- **Socialization:** Interacting and connecting with others to accomplish some sort of goal, whether it be for sharing ideas, personal enjoyment, or completion of a task
- **Teamwork:** Problem solving, communication, and accomplishing tasks with others
- **Cooperation:** Doing the necessary steps to complete a task, either individually or as a group effort

Resources

For detailed information about physical, cognitive, and social skills, see the following resource from the American Occupational Therapy Association: <https://www.aota.org/practice/domain-and-process/skills-and-routines>

For more detailed information on sensory systems, see the following website from Star Institute: <https://sensoryhealth.org/basic/your-8-senses>



Indoor Seed Planting



Indoor seed planting is one of the most common activities for any garden program, offering students the chance to observe the wonderful transformation of a small seed into a growing plant. Not only is it an excellent learning activity for young gardeners, but it also gives them the opportunity to master foundational skills. In this activity, children will sow seeds in small pots, observe them for signs of growth, and care for the germinating seeds and young seedlings.

Below you will find a list of developmental skills this indoor seed planting activity can address. In the instructions, you'll find ideas for modifying the activity to make it accessible to learners who may have specific physical, cognitive, sensory, and social/emotional needs. This resource is designed to help ensure all children in your program can engage with and have fun in the garden.

WHAT SKILLS DOES THIS ACTIVITY SUPPORT?



Physical – fine motor skills, grip strength, bilateral coordination, range of motion, digit opposition, in-hand manipulation, visual perceptual skills



Cognitive – problem solving, sequencing, inhibition



Sensory – sensory processing, proprioception, tactile and visual skills



Social/Emotional – perseverance



Materials

- Planting pots: These can be purchased seed-starting pots or repurposed items, such as small plastic yogurt cups or other 2" to 3" deep plastic containers. Pint- and quart-sized milk and juice cartons with the tops cut off are other options.
- Drip trays, such as plastic container lids or sheet pans
- Soilless potting mix (ideally one made for seed-starting)

Materials (Cont.)

- Large bowl or bucket (for moistening planting mix)
- Waterproof table covers
- Water
- Trowel, large spoon, or other tool for scooping soil
- Small plates or shallow bowls
- Spray bottle and/or small watering can
- Seeds: Cucumbers, tomatoes, lettuce, cosmos, marigolds, and zinnias are good options



Optional materials for activity modifications: Child-sized disposable gloves, spice container with slotted lid, measuring cup

Planning Ahead

- **Create drainage holes in pots, if needed.** If using repurposed containers, poke several $\frac{1}{4}$ " diameter holes in the bottom of each pot. Depending on the type of container, this may need to be done by an adult with a pen/pencil, screwdriver, or drill.
- **Moisten the soilless potting mix.** Pour it into a large bowl or bucket, add warm water, and stir. Peat-based soilless mixes tend to repel water; you may need to add some water, stir, and let the material sit, repeating until the mix is evenly moist (like a damp sponge) but not soaking wet.

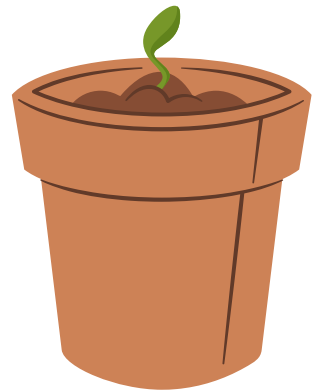
Activity Instructions

1. Cover tables with waterproof table covers.
2. Using hands or a tool to scoop, add moist potting mix to each planting pot, filling them to within $\frac{1}{2}$ " to 1" from the rim of the pot. Gently tap the pots on the table to settle the mix and eliminate air pockets. You can also settle the potting mix by pressing the surface with fingers or another pot.
3. Open a seed packet and place the seeds on a small plate or in a shallow bowl. Keep the seed packet with the seeds so you can refer to it.



Activity Instructions (Cont.)

4. Read the seed packet to determine planting depth. Poke holes in the potting mix to the proper depth using a finger or a pencil or similar tool. Some types of seeds should be pressed onto the soil surface rather than covered with potting mix, so they won't need holes.
5. Sow one or two seeds in each planting hole and scatter potting mix over the holes to fill them.
6. Place the pots on waterproof drip trays to protect surfaces. Carefully water the potting mix using the mist setting of a spray bottle, taking care not to dislodge the seeds.
7. Place the pots in a warm spot. Most seeds germinate best at 70 to 80 degrees F. In dry environments, cover the pots with a plastic bag to increase humidity and keep soil moist.
8. Check pots every few days, adding water as needed to keep the potting mix consistently moist but not soggy.
9. Once seedlings emerge, move the pots to a bright, slightly cooler spot. Most seedlings grow best in temperatures 65 to 70 degrees F) Place pots on sunny south- or west-facing windowsill or, even better, under grow lights positioned 2 to 3 inches above the tops of the seedlings. Water from the bottom by adding water to the drip tray and allowing the potting mix to absorb the water through the drainage holes. This encourages root development and avoids getting water on leaves, which can lead to disease problems. After an hour or so, drain excess water from the drip tray to prevent over-saturating soil, which can lead to root rot.
10. When plants have two sets of leaves, begin watering with soluble fertilizer diluted to half-strength.
11. Once the seedlings are about 3" tall and/or have their third set of leaves, transplant them to larger pots. Continue watering the plants so that the potting mix stays moist but not wet.
12. When plants are ready for their next home, follow instructions for the activity [Planting Seedlings](#).



How to Modify this Activity for Different Learners' Needs



Physical/Motor

- ✿ Adjust the tip on the spray bottle to make it easier or harder to squeeze the handle by turning the tip to the right or left. You can also use a small watering can or cup to water the plants if it's easier.
- ✿ If children have a hard time picking up small seeds, keep them in the packet and have them shake out the seeds. You can simply poke a small hole in the seed packet or snip off the corner with scissors. You can also place the seeds in a clean spice container with a slotted lid. Control the number of seeds that can come out of the slotted lid by taping over excess holes.
- ✿ Mark the planting containers at ½ inch to 1 inch below the rim of the container with a sharpie before starting the activity so that children can see how much soil to put inside the container.
- ✿ Using tools with larger handles can make them easier to hold on to. Wrap the handles with medical webbing tape or foam handle grips to make them larger. Another great option is plastic trowels that may be lighter and easier for some children to grasp.



Cognitive

- ✿ Provide step-by-step written or verbal directions to encourage proper plant watering. Tell the children, “This plant needs 5 squeezes from the spray bottle, nothing more!” or “This plant needs to be watered from the watering can for 3 seconds, let's count together!”
- ✿ Provide children with the simple instructions listed above or pictures of each step to follow along with while completing this activity.
- ✿ Assist children with interpreting the seed packet instructions. After reading the instructions together, help write a short, simple bullet-point list of the most important information, such as the number of seeds to plant, how far apart to plant them, and the proper depth.
- ✿ Provide one task at a time, moving on to the next as one is completed, rather than running through them all at the beginning of the activity.



Sensory

- ✿ Give children the option to wear gloves during this activity if it makes them feel more comfortable.
- ✿ Introduce children to the tactile sensations of soil through a playful introduction activity, like a soil treasure hunt. Hide small objects, like plastic toy animals, in a container of soil and invite them to dig around with their hands or a small trowel or spoon.
- ✿ Provide hand towels for children to clean their hands or have easy access to a sink or bowl of water to wash them throughout the activity.
- ✿ If the entire activity is done in one session, provide opportunities for sensory/movement breaks! Short, simple activities like 15 seconds of wall push-ups or 10 crab walks provide proprioceptive sensory input and can help children who trend towards sensory-craving behaviors to feel calm and regulated, increasing engagement with the gardening task!



Social/Emotional

- ✿ Try this activity with a partner, encouraging turn-taking among peers.
- ✿ As this activity has many steps, ensure you have extra time in your day to complete this activity. Allow children to take their time and limit rushing them through the steps.
- ✿ Build in time for breaks and check-ins throughout this activity. Between steps 2 and 3 might be a good time to allow children a break or the chance to catch up before their peers move on. We want everyone to feel present and comfortable while learning about gardening.

Plant Propagation



Plants have the unique ability to regenerate whole new plants from their parts, such as from a piece of root, stem, or leaf. Practicing plant propagation by making new plants from existing plants can feel like magic to young gardeners, and it also teaches them a lot about plant growth and development. In this activity, they'll take cuttings (pieces of stem), place them in water and a soil mix, and observe them over several weeks to watch for root development.

Below is a list of developmental skills this plant propagation activity can address. In the instructions, you'll find ideas for modifying the activity to make it accessible to learners who may have specific physical, cognitive, sensory, and social/emotional needs. This resource is designed to help ensure all children in your program can engage with and have fun in the garden.

WHAT SKILLS DOES THIS ACTIVITY SUPPORT?



Physical – Gross motor strength, co-contraction, range of motion, grip strength, pinch strength, and hand-eye coordination



Cognitive – attention, sequencing, compare and contrast, concentration, safety, judgement, memory, and problem solving



Sensory – sensory processing



Social/Emotional – communication



Materials

- Plastic water or soda bottles (16 oz. or ½ liter sizes are best), two for each child
- Watering can, pitcher, or other vessel for holding water
- Water
- Large bowl or bucket (for moistening soil mix)
- Soilless potting or seed-starting mix
- Trowel, ice cream scoop, large spoon, or other tool for scooping soil

Materials (Cont.)

- Ruler
- Scissors
- Plants (for cuttings): Commonly available plants that readily root in water and soil include basil, coleus, peperomia, polka dot plant, and silver inch plant (*Tradescantia zebrina*). You'll need enough plant material to let each child make two 4" to 6" cuttings.

Optional materials for activity modifications: Tape, child-sized disposable gloves, small funnel, or parchment paper that can be rolled into a funnel shape

Planning Ahead

- **Prepare the plastic bottles:** Remove the caps and use sturdy scissors to cut off the narrow tops of the bottles. Take care to trim off any sharp edges so the cut is relatively smooth. Note: Cutting plastic can be tricky and should be done by an adult in advance.
- **Moisten the soilless potting mix.** Pour it into a large bowl or bucket, add warm water, and stir. Peat-based soilless mixes tend to repel water; you may need to add some water, stir, and let the material sit, repeating until the mix is evenly moist (like a damp sponge) but not soaking wet.

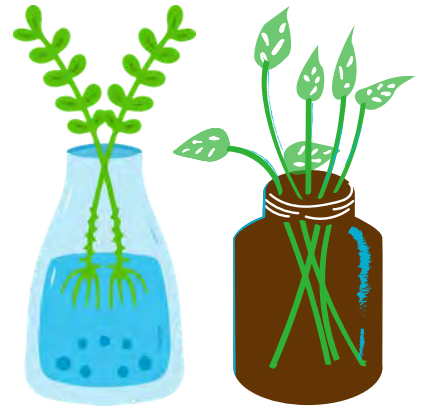
Activity Instructions

1. Using the watering can, pitcher, or other vessel, fill one water bottle halfway full with water. This will be the vase.
2. Fill the second water bottle with moistened soil using a trowel, scoop, or spoon, so it is about halfway full. This will be the pot.
3. Demonstrate for children how to take plant cuttings: Using clean scissors, cut a section of stem that measures 4 to 6 inches long and has at least 4 leaves. Remove the lower leaves from the cutting so that the bottom 2 to 3 inches of stem are bare.
4. Have each child take 2 plant cuttings from the same plant. Have them use their fingers or scissors to remove the bottom leaves.



Activity Instructions (Cont.)

5. Place one cutting in the vase (the bottle with water). The leafless part of the stem should be submerged, and the part of the stem with the leaves should be exposed. You may need to pour out some water during this step so that the water is at the correct level.
6. Place the other cutting in the pot (the water bottle with soil). Arrange the cutting so the stem is against the side of the pot, so the roots will be visible as they grow. The plant's leaves should be above the soil surface.
7. Monitor plants and record any changes. Compare and contrast any differences between the plant in the pot and the one in the vase.
8. Continue to add water to the vase if it falls below the original level. Add water as needed to ensure the soilless mix in the pots stays moist but not saturated.
9. Once the plants grow roots, transfer them to large pots.



How to Modify this Activity for Different Learners' Needs



Physical/Motor

- ✿ If children would benefit from a stabilizer to hold the plant steady for taking cuttings, tape the plant to a desk or wall. This allows them to use both hands for cutting, balance, and/or support as needed.
- ✿ Children can fill their water bottle “vase” from the sink rather than pouring from a container/watering can.
- ✿ Put a plastic funnel in the water bottles to help children pour the water into the bottles more easily. You can make a homemade funnel for adding the soil by rolling up a piece of parchment paper into a cone shape.



Cognitive

- ✿ While providing instructions on how to cut plants for propagation, use verbal, written, and visual demonstrations to accommodate all children.
- ✿ Provide an example picture of what a finished plant cutting should look like.
- ✿ Break this task up into separate days. Day 1 could be preparing and filling the vases; Day 2 could be preparing the pots; and Day 3 could be the propagation cutting day. Breaking up the task may help children stay engaged throughout each step.
- ✿ Help children determine where to cut the plant stem with visual hints. You can tie a ribbon or put a clothespin around the stem, or simply place your finger on the spot on the stem where children are meant to cut.



Sensory

- ✿ Take this activity outside! It eliminates the stress of cleaning up a mess inside and allows children to enjoy fresh air and sunshine.
- ✿ Encourage children to engage multiple sensory systems by making observations about the soil and water. Have them identify what differences they feel, see, and smell between the soil and the water. Ask them how they think these differences will impact the growing plant!
- ✿ Provide gloves for children to use during this activity, even if it's thin rubber ones to keep their hands clean and dry.
- ✿ Facilitate opportunities for children to engage in heavy work throughout this activity. Tasks like carrying a filled watering can or scooping soil can provide proprioceptive input and help children who tend towards sensory craving to feel calm and regulated while participating in the activity.



Social/Emotional

- ✿ Try this activity with partners! Children may benefit from having a buddy to help them cut the plants, fill the containers, and place the plants in them.
- ✿ Have children monitor plants and discuss with a buddy. This can be a great way to support socialization among peers.
- ✿ Try different ways to encourage young gardeners to report progress. They can talk about it with a buddy, color a picture of a plant showing how much it's growing, or point to a picture to identify what stage the plant is at when given different pictures of the plant; seeds, budding, stem, leaves, flower/fruit.
- ✿ If children try to take cuttings and plant all at the same time, the learning environment could get pretty busy! Try splitting children into groups and assigning them to workstations with an adult at each station for support. This can help keep the environment calm, quiet, and organized.



Planting Container Gardens



Planting container gardens is a great way to add plants to challenging spaces and to start your gardening adventures on a smaller scale. Container gardens offer a lot of flexibility, too, so you can adapt your garden program to meet the diverse needs of your young gardeners. In this activity, children will decorate a container and then plant seeds or seedlings.

Below is a list of developmental skills that planting container gardens can address. In the instructions, you'll find ideas for modifying the activity to make it accessible to learners who may have specific physical, cognitive, sensory, and social/emotional needs. This resource is designed to help ensure all children in your program can engage with and have fun in the garden.

WHAT SKILLS DOES THIS ACTIVITY SUPPORT?



Physical – Motor planning, fine motor skills, grip strength, range of motion, gross strength, and hand eye coordination



Cognitive – problem solving, attention, and planning



Sensory – sensory processing, and tactile and visual skills



Social/Emotional – patience, perseverance, and creativity



Materials

- Containers: These can be purchased pots or repurposed items, such as buckets, colanders, wooden crates, or even old boots or [hanging shoe organizers](#)!
- Potting mix, ideally a well-draining soil mix labeled for container gardening. Don't use garden soil as it is too heavy, holds too much moisture, and may harbor plant disease organisms.
- Wheelbarrow or large bucket for moistening potting mix
- Awl or drill, if needed, to create drainage holes in repurposed containers

Materials (Cont.)

- Decoration materials: Paint or waterproof glue and small items such as shells, smooth pebbles, and beads
- Waterproof glue
- Water
- Trowel
- Spray bottle
- Watering can
- Drip tray
- Seeds and/or seedlings/transplants

Optional materials for activity modifications: Child-sized disposable gloves

Planning Ahead

- **Decide what you want to grow and purchase seeds and/or plants.** A wide range of plants grow well in containers, including vegetables, herbs, and flowering plants. Some plants, such as tomatoes and peppers, grow best from seedlings, while others can be started from seed, such as zucchini and sunflowers. It's usually best to grow one plant, or one type of plant, in each container. If you want to grow several plant types in one container, make sure they have similar sunlight and water needs. It is important to let your young gardeners have a say in what they want to grow.
- **Select the containers.** You can purchase containers or use repurposed items. If growing edible crops in buckets, be sure to use food-grade buckets. Match the size of the container to the plant. For example, small containers that hold around 3 gallons are good for compact plants like lettuce and herbs. Larger plants, such as tomatoes and squash, do best in larger containers, such as 5-gallon buckets or pots.
- **Add drainage holes, if needed.** Drill or poke five to seven ¼"- to ½"-diameter, evenly spaced holes across the bottom of buckets and other repurposed containers.
- **Plan for care.** Newly planted containers need frequent care, including regular watering, to ensure the plants get established. In general, plants growing in containers need more frequent watering and fertilizing than plants in garden beds. The smaller the container, the more frequently it will need watering.

Activity Instructions

1. Decorate the outside of the container before you begin planting. This is an optional — but fun! — part of the activity. If doing this step with waterproof glue, gloves are a must to prevent the glue from contacting the learner's skin. Allow paint or glue to dry before planting.
2. If the potting mix is dry to the touch, moisten it before using. Pour the mix into a wheelbarrow or large bucket, add water, and stir until the mix is evenly moist but not soaking wet. Note that peat-based potting mixes tend to repel water; you may need to add water, stir, and let the mix sit, repeating until it is evenly moist.
3. Scoop the moist soil into the container with a trowel or gloved hand. If you're planting seeds, add soil to within about an inch from the top of the container. If you're planting seedlings, add less soil.
4. Plant your seeds following directions on the seed packet.
5. If planting seedlings, use a trowel or your hands to create a planting hole. Set the plants in the hole and backfill with potting mix, firming it as you go. Adjust the height of the plant as needed so that the top of the root ball is at the soil surface. You want the soil mix to end up about an inch below the rim of the pot. Learn more about it in the [Planting Seedlings](#) activity.
6. Use a watering can to gently moisten the soil, taking care not to dislodge seeds or seedlings.
7. Place the container outdoors in a spot that meets your plants' sunlight needs.
8. Check the soil every few days and water as needed to keep the soil evenly moist. To ensure all the soil is moist, apply water until it drains from the bottom of the container. If the soil has dried and pulled away from the edges of the pot, set the container in a basin of lukewarm water for an hour to allow the soil to rehydrate. Then remove it and allow excess water to drain.
9. Fertilize plants weekly using an all-purpose organic fertilizer.



How to Modify this Activity for Different Learners' Needs



Physical/Motor

- ✿ Choose containers for planting that can help young gardeners be successful. For example, some children may benefit from using shorter containers that are easy to fill with soil and reach into for planting, and some may benefit from ones with handles to make carrying and holding the container easier. Some children may benefit from heavy containers that will stay in position, and others may benefit from light containers that can be moved. Some children may benefit from using a brightly colored container that is easy to see!
- ✿ Provide crafting supplies that all children can have fun and be successful with. Examples include dot paint pens, thick paint brush handles, foam paint rollers, and paint stamps! Other options, if gluing is desired, are shells, large beads, and smooth pebbles.
- ✿ If holding a trowel to scoop soil is difficult, try another type of tool. A mug with a handle works great to scoop soil and may be easier to hold.



Cognitive

- ✿ Have children watch you draw a line on the container or bucket with a permanent marker to indicate the soil fill line.
- ✿ Support children by providing them with helpful cues or short instructions from the seed packet directions. The most important information for this activity is seed depth and seed spacing. If seeds should be 2 inches apart, give examples of familiar items that are 2 inches, such as a pinky finger.
- ✿ Break this task up into separate days. Day 1 could be preparing and filling the vases; Day 2 could be preparing the pots; and Day 3 could be the propagation cutting day. Breaking up the task may help children stay engaged throughout each step.
- ✿ Your directions should be short, simple, and straightforward to be most effective. Eliminate extra words to help children absorb the most helpful information needed to complete the task. Instead of saying “Now, you need to plant all 5 of the seeds so that they are spaced out about 1 inch apart from each other in the soil inside the bucket,” say, “Place the seeds 1 inch apart.”



Sensory

- Take this activity outside! It eliminates the stress of cleaning up a mess inside and allows children to enjoy fresh air and sunshine.
- Checking if the soil is moist uses different sensory systems. Children can touch the soil, look at it, or have a friend push down the soil and they can listen for the “squish” of moist soil!
- Tools like a drill can be quite noisy and be difficult for some children to tolerate. Try to drill the holes on the bottom of the containers before the activity starts.
- Adding weight to a trowel can help provide proprioceptive sensory input, making it easier to scoop with. Some DIY ideas to add weight to a trowel include taping/gluing small items like pennies or washers to the handle of the tool then covering it with medical tape.



Social/Emotional

- Give children a few choices of what they would like to plant. Provide them with pictures of the different seeds they can choose from and what they will look like when grown. This can help support children's independent decision-making skills.
- Support socialization by encouraging, but not requiring, children to share their decorated containers with the group or peers.
- Make sure to build in breaks and check-ins during this activity if done in a group setting to avoid children falling behind or feeling rushed.



Planting Seedlings



If seeds are too small to handle or too slow to grow for your young gardeners, you may want to jumpstart your garden by planting small plants called seedlings (also called transplants). You can purchase these seedlings at garden centers, or you can start your own by sowing seeds in small pots or trays. The seedlings are then transplanted (moved) into larger containers or garden beds to grow to maturity.

Planting seedlings is an activity that can address a variety of developmental skills; below is a list of these skills. In the instructions, you'll find ideas for modifying the activity to make it accessible to learners who may have specific physical, cognitive, sensory, and social/emotional needs. This resource is designed to help ensure all children in your program can engage with and have fun in the garden.

WHAT SKILLS DOES THIS ACTIVITY SUPPORT?



Physical – Coordination, gross motor strength, fine motor skills, grip strength, bilateral coordination, range of motion, motor planning, digit opposition, pincer skills, hand-eye coordination



Cognitive – sequencing, attention, problem-solving, planning



Sensory – sensory processing, tactile, proprioception, and visual skills



Social/Emotional – perseverance



Materials

- Seedlings/transplants
- Container or garden bed
- Water
- Watering can
- Trowel
- Child-sized gloves

Materials (Cont.)

- tray or table if indoors
- scissors
- potting mix
- bowls



Planning Ahead

- **Timing the activity:** If you'll be planting seedlings in a garden bed or outdoor container, it's best to schedule this activity for a day when it is cool and/or cloudy because the roots of young seedlings can quickly dry out and be damaged in hot, sunny, dry weather. Newly planted seedlings need consistently moist soil, so schedule this activity for a time when light rain is in the forecast and/or someone is available to provide supplemental water for a few weeks after planting. During those weeks, the seedlings' roots will venture into the surrounding soil, and less frequent watering will be needed.
- **Decide where you'll plant:** Most plants acclimate well to growing in containers, raised beds, and in-ground beds.
- **Prepare the planting area as needed:** In existing garden beds, remove any plants (foliage and roots), loosen the soil, and, if desired, mix in some granular organic fertilizer. If you're planting in a new bed, prepare the planting area. **Learn more:** [Preparing the Soil](#)
- **Decide what to plant:** Local garden centers offer an array of seedlings in spring, and/or at other times, depending on your climate. Look for easy-to-grow plants, such as tomatoes, peppers, and herbs. If you'll be planting your seedlings in a container, choose one that's large enough to accommodate the mature plant. **Learn more:** [Consider Container Gardening](#)

Activity Instructions

Day Before the Activity

If you are planting in an in-ground or raised garden bed, water the soil the day before you plan to plant so it is moist on planting day.

Activity Instructions (Cont.)

Day of the Activity

A few hours before you begin planting:

- Water the seedlings with a spray bottle or gentle watering can, taking care to make sure all the soil is moist but not dripping wet. If the soil in the container has dried and pulled away from the edges, set the pots in a basin of lukewarm water for an hour to allow the soil to rehydrate.
- If you are planting your seedlings in an existing container, moisten the potting soil mix in the container.
- If you're starting with a new container and a bag of potting mix, moisten the potting mix and then fill the container to within a few inches of the top.
- Gather all your supplies: trowel for scooping or digging in soil, watering can and water, gardening gloves, potting mix (if using), scissors, tray or table (if indoors).

Begin Activity

1. Determine the size of the seedling's roots, so you know how big a hole you'll need to dig. The easiest way to get an approximate size of the roots is to measure the pot.
2. Dig the planting hole, making it slightly larger than the plant's root ball. Most seedlings should be planted as deeply as they were growing in their containers — in other words, you don't want to bury the stems. You can set the seedling, still in its pot, in the planting hole to confirm that the hole is the right size; adjust if needed.
3. Remove the seedling from the pot. Place your hand over the soil with the seedling's stem between your thumb and index finger. Important: Don't pull on the stem to remove the seedling; this can damage the stem. Turn the pot upside down. If the seedling doesn't slide out, tap the bottom of the pot to release the roots. If the roots don't release, try squeezing the pot or rolling it on its side on a table. You can also try inserting a finger or a small tool through the drainage holes in the bottom to push out the root ball. Put a tray under the pot or go outside to complete this step to minimize spilling soil inside if that is where you are working.



Activity Instructions (Cont.)

4. If roots are matted, gently loosen and tease them apart by pinching them with your fingers. Try to do this without ripping any of the roots. Then, holding the seedling by the soil or by the leaves, gently place it in the planting hole. The top of the root ball should be right at the soil surface. Adjust the size of the planting hole if needed. Gently backfill the soil around the root ball and pat it down so it is snug.
5. Adults: If using a plantable pot, such as a peat pot, before placing the pot in the planting hole, trim any extra pot material that sticks above the soil surface. You want the rim of the pot to be even with or below the soil surface; otherwise, the exposed pot can wick moisture away from the roots.
6. Gently water the seedling with a watering can so the soil is moist but not soaking wet.
7. Provide plants with shelter from strong sun and wind for a week or two using floating row covers, if needed.

How to Modify this Activity for Different Learners' Needs



Physical/Motor

- ✿ If skills like removing the seedlings gently from their pots are difficult, lay the seedling container on its side on the table. Children can then hold the container with both hands if needed and gently shake the seedling out onto the table, taking care not to damage the stem. Make sure the soil is moist; this will allow the root ball to slide out of the container more easily. Place a tray under the pot during this step to contain the soil.
- ✿ You can use other tools to loosen the roots in the root ball if fine motor skills like pinching are difficult for children. Try using a dull pencil or pen tip to gently slide and scoop under the roots to loosen them. Build up the handle of the writing tool with sticky medical tape or rubber bands if gripping is a challenge.
- ✿ The seedling can be removed from its pot without turning the pot upside down. If it's easier, children can hold the seedling container steady with their legs while seated, or have a buddy hold the container while they lift the seedling by the foliage to remove it.
- ✿ If the root ball is too tight in the pot, try soaking it in water or gently squeezing the pot to loosen up the roots.



Cognitive

- ✿ Talk with children about the different gardening terms used in this activity. Some words like “seedling,” “transplanting,” and “root ball” may be new to some children. Explaining these before starting can help prevent confusion during the activity.
- ✿ Explain to children why it is important to tease apart the root ball. Explain that the roots are like the plant's fingers that reach into the soil and soak up water and nutrients for the plant.
- ✿ Offer a silly example to help children understand what it means to tease the roots. Tell them you want it to look like an octopus/spider/jellyfish with lots of legs coming off it! Invite children to move their arms and legs like an octopus.
- ✿ Help children complete this activity with more independence by making a paper checklist with all the steps for the activity. Encourage them to check off tasks as they complete them.



Sensory

- ✿ Soil can be patted down after planting the seedling with a trowel or common household items like a spoon if children don't want to directly touch the soil. They can also wear gloves.
- ✿ There is a lot to do in this activity. Help children get their wiggles out before starting by playing a game of Simon Says or freeze tag in the garden. Take breaks throughout the activity as well.
- ✿ Children can do this activity sitting, kneeling, or standing, or switch positions throughout the activity. Changing the position of the body can provide calming proprioceptive and vestibular sensory input, especially during a gardening activity where children are reaching up and down and side to side to gather materials or scoop and dig in the soil.
- ✿ Remind children to bring jackets (and possibly rain gear) for this activity if you can find a cool, cloudy rainy day to complete it.



Social/Emotional

- ✿ Encourage children to complete this activity with a buddy. This can easily be made into a two-person task, and is a great way to practice communication and problem-solving among peers.
- ✿ Check in with children throughout the activity! Some steps may take longer than others, so make sure no one is falling behind or needs help before moving on.
- ✿ Remind children that although this activity has specific instructions, it's okay if it does not go exactly to plan. Mistakes can always be fixed!



Planting Seeds Outside



Some plants grow best when sown directly into the garden as seeds. Examples include beans and peas, root crops like carrots and radishes, leafy greens like lettuce, and many vining crops like cucumbers and squash. In this activity, young gardeners will finish preparing seed beds, sow seeds in furrows, and care for young seedlings.

Below you will find a list of developmental skills that planting seeds outside can address. In the instructions, you'll find ideas for modifying the activity to make it accessible to learners who may have specific physical, cognitive, sensory, and social/emotional needs. This resource is designed to help ensure all children in your program can engage with and have fun in the garden.

WHAT SKILLS DOES THIS ACTIVITY SUPPORT?



Physical – Gross motor strength, digit opposition, range of motion, in hand manipulation, pincer skills, motor planning, balance, grip strength, visual perceptual skills, hand eye coordination



Cognitive – sequencing, planning, problem solving



Sensory – sensory processing, tactile, proprioception, vestibular, and visual skills



Social/Emotional – teamwork, communication, resilience



Materials

- Garden bed
- Tools for preparing soil (shovel, rake, hoe)
- Seeds (save seed packets for reference)
- Trowel
- Sand
- Watering can or hose



Optional materials for activity modifications: Child-sized disposable gloves, spice container with slotted lid

Planning Ahead

- **Prepare garden beds in advance.** Learn how to prepare soil for planting here: [Preparing the Soil](#). In general, it is best to complete the bulk of the preparation work ahead of time, such as removing weeds and other plant debris and loosening the soil. Your young gardeners may be able to help with final tasks, such as raking the seedbeds smooth in preparation for planting, depending on their age and ability.
- **Decide what you'll plant.** Choose crops that grow well when sown directly into garden beds, such as leafy greens, beans, corn, root crops such as radishes, carrots, beets, squash-family plants like cucumbers, melons, zucchini, and sunflowers.
- **Determine optimal sowing time.** Check seed packets for information on when to plant seeds. Find additional information here: [When to Plant Seeds](#). If planting several crops, create a [planting calendar](#) to help you schedule this activity.
- **Check soil moisture the day before planting.** If the soil is dry, irrigate the planting bed so that the soil is moist on planting day.

Activity Instructions

1. In general, it's easiest to plant seeds in rows. That way, you'll be able to mark the rows and know where to look for germinating seeds. Planting in rows will also make it easier to distinguish crop seedlings from weeds. Make final preparations to the seed bed by raking it smooth and removing small stones and debris.
2. Read the seed packet to determine the planting depth of the crop. Make a furrow, a straight, shallow trench to that depth. You can do this by pressing the handle of a small rake into the ground, or by laying a long, straight object on the ground for reference and using a trowel or rake to dig a furrow next to it.
3. Read the seed packet to determine the recommended amount of spacing between seeds. Large seeds, such as peas and beans, can be planted one by one at the appropriate spacing. Small seeds can be planted by pinching a few seeds between your fingers and scattering them in the furrow to approximate the recommended spacing. Another option for small seeds is to mix them with sand in a bowl, then sprinkle the seed-and-sand mixture into the furrow.
4. Gently cover the seeds with soil using your hands, a trowel, a shovel, or a rake. Take care not to bury seeds too deeply.

Activity Instructions (Cont.)

5. Pat down the soil with your hand or the blade of a hoe. Then use a watering can or hose to gently apply water over the row to settle the soil around the seeds, taking care not to dislodge them.
6. Monitor the garden bed and irrigate as needed to keep the soil moist but not soaking wet. Keep an eye out for your new seedlings! The seed packet will give you an approximate number of days to germination; this can be as little as a few days or as long as several weeks.
7. Depending on seed spacing and germination rates, the planting row may be too crowded and will need to be thinned. Check the seed packet for the recommended final spacing. Once seedlings are a few inches tall and have grown their first set of leaves, use scissors to snip off extra plants at the soil level. Don't rip out the extra plants, as this can damage the roots of the remaining plants.
8. Remove weeds to reduce competition for light and nutrients.



How to Modify this Activity for Different Learners' Needs



Physical/Motor

- ✿ For children who use a wheelchair or have difficulty bending down, attach short gardening tools to PVC pipe using durable medical tape, so that children can reach to the ground and dig in the soil. You can also use a long cylindrical PVC pipe and have children place seeds inside as a way to transport seeds to the ground.
- ✿ Bring the garden up to the children by installing raised beds that provide roll-under capacity for children to sit facing the garden.
- ✿ Place items like a yardstick or broom on the ground to indicate to children where they should make the furrow. Paint or use brightly colored tape wrapped around the yardstick or broom handle for better color contrast.





Physical/Motor

- ✿ For children who have difficulty sprinkling seeds with their fingers, fill up a cleaned, old spice container with seeds and have them sprinkle the seeds by shaking the container over the furrows. They can also just take a pinch of seeds and toss them over the seedbed.
- ✿ Demonstrate for children the proper body mechanics for using tools in the garden, such as bending at the knees and hips rather than the back to avoid injury when digging in the soil.



Cognitive

- ✿ Explain to children the meaning of “furrow,” “row,” and “seedbed” for those who are just learning these words for the first time. It may be helpful to show a picture of these as well.
- ✿ Provide a demonstration and example of how to properly make a furrow.
- ✿ Help children with reading and implementing instructions from the seed packet. Write out a short bullet point list of the most important information for them to remember, like how far apart to plant seeds.
- ✿ Provide children with a ruler marked with a brightly colored marker or sticker at the distance that indicates how far apart to plant the seeds. You can also cut a piece of string that indicates how far apart to plant the seeds.





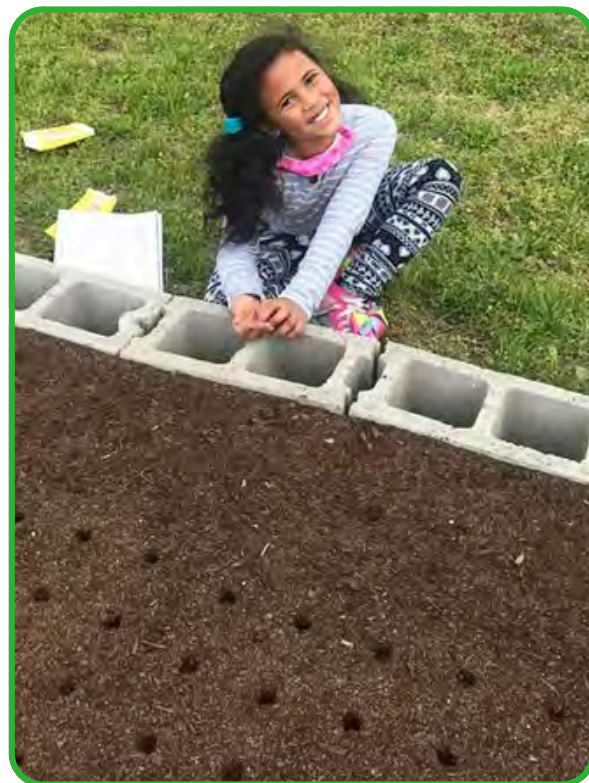
Sensory

- When heading outside to start the activity, encourage students to skip, hop, or crawl like their favorite animal on their way to the garden. This can be a fun and playful way to begin your gardening task, while providing calming proprioceptive and vestibular sensory input before starting the activity, so children are ready to learn!
- Encourage children who trend toward sensory craving behaviors to carry heavy objects like shovels, hoes, or rakes to the garden, or to dig in the soil.
- Children who display sensory avoiding behaviors may benefit from breaks from the activity to go to a quiet, calm space in the garden and relax.
- Have water, shade, and a place to rest available throughout the activity, especially if working on a hot day.



Social/Emotional

- Encourage teamwork during this activity. Gardening is a great opportunity to practice communication and problem-solving with peers in a natural environment.
- If done as a group activity, ensure each child has a role in the activity that highlights their strengths and interests. Give them a choice of what they would like to do and acknowledge their hard work throughout the activity.
- Be sure to remind children to have careful hands if working outside with bigger garden tools like long and sturdy shovels, hoes, or rakes. Encourage them to be mindful of other children around them, and to be careful not to swing or lift tools. This helps everyone feel safe while gardening!



Weeding



A weed is simply a plant that is growing where you do not want it to grow. “Weeds” can actually be beneficial, for instance, when their deep roots prevent soil erosion or their flowers provide nectar to hungry pollinators. That said, they can also negatively impact your garden by competing with your cultivated plants for sunlight, water, and nutrients. In this activity, children will discover the importance of learning to identify weeds and practice removing them to create a healthy, flourishing garden.

Below you will find a list of developmental skills weeding can address. In the instructions, you’ll find ideas for modifying the activity to make it accessible to learners who may have specific physical, cognitive, sensory, and social/emotional needs. This resource is designed to help ensure all children in your program can engage with and have fun in the garden.

WHAT SKILLS DOES THIS ACTIVITY SUPPORT?



Physical – Fine motor skills, pinch strength, grip strength, digit opposition, in-hand manipulation, gross strength, motor planning, gross motor skills, visual perceptual skills



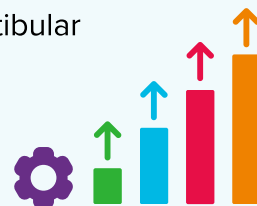
Cognitive – attention, planning, inhibition



Sensory – sensory processing, tactile, visual, proprioception, vestibular senses

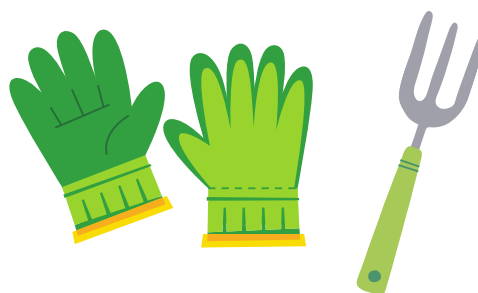


Social/Emotional – patience, perseverance, cooperation



Materials

- Gardening gloves
- Hoe, trowel, shovel, cultivating tools
- Bucket or bag to collect weeds
- Compost bin



Planning Ahead

- **Identify weeds.** Learning to distinguish weeds from your desired plants can be a challenge. If you're unsure how to know which plants to remove, consult with a knowledgeable gardener or visit a weed identification website.
- **Determine what tools you'll need.** Newly germinated weeds can be dislodged with a trowel or hoe, for example, while deep-rooted perennial weeds, like dandelions, need to be dug out.
- **Check soil moisture the day before weeding.** If the soil is dry, irrigate the planting bed so that the soil is moist on weeding day. This will make the weeds easier to pull.

Activity Instructions

1. Survey the planting beds to determine the types and ages of weeds, and therefore the tools your young gardeners will need. They can use their hands to remove small weed seedlings from loose, damp soil. Larger weeds and those with established roots will require digging out with a hoe, shovel, or trowel. Weeds in dry or compacted soil will likely require a weeding tool.
2. Anyone using their hands to weed should wear gardening gloves to protect them from sharp, prickly weeds.
3. To remove a weed by hand, reach down and grasp the weed tightly between your thumb and fingers as low on the stem as you can, preferably at the base near the soil surface.
4. Slowly pull the weed upwards and out of the ground, trying to keep its roots attached. It is important to remove the roots from the soil to prevent the plant from regrowing.
5. **If using a hoe or cultivating tool to remove weeds, adult supervision and help are required.** Locate a weed and place the tool in front of it. Grasp the handle with both hands and drag the tool backward towards you with the sharp side of the blade facing towards you. For small weeds, the blade may be able to gently rest at the surface of the soil while you use the hoe. For larger, deeper weeds, apply a bit of pressure so the hoe digs in just below the soil surface to remove deeper roots.
6. Collect weeds with a gloved hand, or use a shovel to scoop them into a bag or bucket, then bring them to the compost bin. **Note:** Although weeds will decompose along with other plant matter to create nutrient-rich compost for your garden, some weeds pose problems. Avoid composting weeds with flowers that have gone to seed, since you may inadvertently spread weed seeds when you spread your compost; weeds with thorns or prickles; and weeds with underground parts that readily resprout, such as thistle and nutsedge.

How to Modify this Activity for Different Learners' Needs



Physical/Motor

- ✿ If children have difficulty bending down, a reacher tool like the one seen here can be used to grasp and pull on weeds or pick them up and place them into a bag.
- ✿ If pinching and pulling is difficult, have children use a small trowel to gently scoop down into the soil and remove weeds and their roots.
- ✿ If children are digging bigger weeds out, wrap rubber bands around handles of gardening tools to add traction and make them easier to grasp.
- ✿ Educate children about simple body mechanics that can make weeding easier. For example, use two hands to pull out larger, deeper weeds to avoid straining the dominant arm. Sit or kneel for this activity for more leverage and to avoid any strain on the back.



Cognitive

- ✿ For children who have not used gardening tools before, demonstrate and explain how to use a hoe and cultivating tools.
- ✿ Talk to children about why we pull weeds from the garden. Explain that they can be harmful to other plants, and pulling them out is part of taking care of our garden.
- ✿ Educate children about how to identify a weed versus a plant that should keep growing in the garden. You can show them pictures or real examples of weeds that are growing outside and need to be pulled, and which plants are to be left in the ground. If you have a few common weeds, you can make laminated flashcards that can be used to help children identify the weeds in the garden. Another option is to mark the weeds in some way to confirm that they should be pulled. For few but larger weeds a small piece of yarn could be tied around the plant. For smaller, more numerous weeds, you could sprinkle flour on the leaves to help with identification.
- ✿ Increase children's engagement in this activity by making it into a fun game or gentle competition. Challenge children to see who can fill their bag with weeds first. Everyone is a winner!



Sensory

- ✿ If children don't want to kneel or sit directly in the dirt to pull weeds, give them a pillowcase or towel to kneel/sit on in the garden. Or, they can use a reacher.
- ✿ Have children wear sunglasses to shield their eyes from any flying dirt when pulling weeds, and a hat to keep sun out of their eyes.
- ✿ Offer children who trend towards sensory craving behaviors the opportunity to carry heavy bags full of weeds. This type of heavy work provides proprioceptive and vestibular input!



Social/Emotional

- ✿ Weeding is a great opportunity for teamwork! Encourage children to divide up the garden into smaller sections so everyone has a designated space to weed. This can also make the task less overwhelming if there are many weeds to remove.
- ✿ If children don't want to participate in weeding, help them find another job. They can be the weed spotter, hold the bag or bucket for other children, collect the weeds once they are pulled, or bring the weeds to the compost pile.
- ✿ While explaining to children the importance of pulling weeds and not plants, emphasize that mistakes happen. If they accidentally pull a plant while weeding, they can always replant it!
- ✿ Talk with children about safety rules before starting the activity. This activity uses sharp objects, so frequently remind them not to run with sharp objects and to be careful of the other children around them.



Mulching



Mulching garden beds protects the underlying soil from erosion, conserves moisture, and deters weed growth. Common mulching materials include bark, shredded wood, and straw. This mulching activity offers opportunities to teach children about the importance of conserving water and caring for the soil and their plants. It's also an active, fun opportunity to help beautify and tend the garden.

Below you will find a list of developmental skills mulching can address. In the instructions, you'll find ideas for modifying the activity to make it accessible to learners who may have specific physical, cognitive, sensory, and social/emotional needs. This resource is designed to help ensure all children in your program can engage with and have fun in the garden.

WHAT SKILLS DOES THIS ACTIVITY SUPPORT?



Physical – Gross strength, grip strength, gross motor skills, range of motion, motor planning, balance, bilateral coordination, hand eye coordination, visual perceptual skills



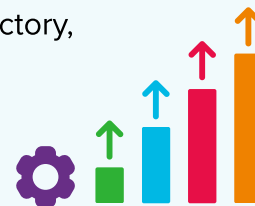
Cognitive – attention, planning, problem solving, sequencing



Sensory – sensory processing, tactile, visual, proprioception, olfactory, vestibular senses



Social/Emotional – patience, resilience, teamwork, communication



Materials

- Shovel, trowel, hoe, cultivator, rake
- Gardening gloves
- Large bucket or bag
- Wheelbarrow
- Mulch
- Compost bin
- Watering can or hose



Planning Ahead

- **Decide on the type of mulch.** For use in perennial beds and around trees and shrubs, shredded bark and bark nuggets are popular; pine straw is also common in the southern U.S. Wood chips are another option. For vegetable gardens, straw is a popular choice because it's lightweight and easy to pull aside for sowing seeds and planting. Avoid used mulch acquired from off-site; it's likely partially decomposed, making it heavy and possibly containing soil-borne disease organisms. Also, avoid using hay as mulch; it likely contains weed seeds.
- **Acquire mulch.** You may be able to get donated wood chips from a local arborist, landscaping company, or municipal facility. Bark mulches sold in bags or in bulk, pine straw, and straw bales can be purchased at local garden centers.
- **Evaluate existing mulch.** If existing mulch has begun to decompose, you can leave it on the bed and just top it off with a thin layer of fresh mulch, as long as the overall mulch layer won't exceed 3" to 4" deep. In general, plastic mulch should be removed, since it inhibits water penetration.

Activity Instructions

1. Gather gardening tools. If using bulk bark mulch, you'll need a shovel and wheelbarrow to transport it. If using bagged mulch, you can use a wheelbarrow to transport it. If you'll be removing old mulch, you'll need a big bag, bucket, or wheelbarrow.
2. If there is old mulch on top of the garden bed that needs to be removed, use a rake to move it into a pile. To do this, place the rake on top of the mulch, then drag the rake towards your body. Rake the old mulch into a pile, then use a shovel to scoop it into a bag or bucket. Bring it to the compost bin and then scoop or pour it into the bin. Remove any plastic mulch and set it aside.
3. Using your hands or a gardening tool, remove any weeds, grass, or dead plants from the soil. It's best to take the time to remove them now, rather than burying them and having to dig them up later if they sprout through the new mulch. Learn how to remove weeds in the [Weeding](#) activity.



Activity Instructions

4. Once the area is cleared, it is ready for a new layer of mulch. Empty the bag of mulch into a wheelbarrow, or use a scoop or shovel to fill it if using bulk mulch, then push it close to the garden. A wheelbarrow makes it easier to move mulch and scoop it out rather than carrying a bag of mulch and trying to pour it out.
5. Use a shovel to scoop the new mulch onto your garden. Try to distribute the scoops of mulch evenly around the beds.
6. Use your hands or a rake to spread the mulch evenly around the garden. In general, a layer of mulch that is 2" to 4" deep will smother weeds while allowing water and air to reach the soil.
7. If you already have plants in your garden, keep mulch a few inches away from the plants' stems or trunks. Piling mulch against stems and trunks can trap moisture and lead to disease problems.
8. When you're finished placing the mulch, water your garden with a watering can or hose to settle the mulch.

How to Modify this Activity for Different Learners' Needs



Physical/Motor

- ✿ If carrying a heavy bag or wheelbarrow of mulch is difficult, divide the mulch into small buckets that may be easier to carry to the garden. Each child can carry a bucket, or multiple trips can be made by those who want to be in the bucket brigade.
- ✿ If holding the handles of gardening tools is difficult, try using different kinds of tools for scooping or spreading mulch. You can use a mug with a handle, a cup, or a bowl. Another option is to make the handles of garden tools easier to hold by wrapping them with layers of sticky medical tape or rubber bands. Children can also wear gardening gloves and use their hands as tools to scoop and spread mulch around the garden.
- ✿ If scooping mulch out from the wheelbarrow is not possible for children to do, dump the bag or wheelbarrow full of mulch out onto the garden and have children help spread it around over the soil.
- ✿ If you have a big garden space, move the wheelbarrow close to where you want to place mulch. This will be easier and less tiring than carrying big scoops of mulch across the garden with the shovel or rake.



Cognitive

- ✿ Explain and show the difference between mulch and soil. Ask children what differences they notice in color, smell, texture, etc. This will help prepare them to complete parts of the activity like scooping out old mulch and leaving the soil beneath.
- ✿ To help children maintain attention and engagement with the activity, eliminate any extra distractions from the environment. Try this activity when the garden area is not overly busy with other children doing different activities, or with everyday noises like cars, lawnmowers, or other recreational activities.
- ✿ Another way to increase engagement and maintain children's attention for this activity is to play a game while mulching, such as 20 questions about nature or another topic of interest. Games help make activities feel more playful and fun!



Sensory

- ✿ Children who trend towards sensory craving behaviors may benefit from doing the “heavy work” involved in this task. Carrying heavy bags of mulch or pushing a wheelbarrow provides children with lots of proprioceptive sensory input.
- ✿ Activities like scooping and spreading mulch in the garden is a great way to provide vestibular sensory input. Bending up and down during these activities incorporates children's sense of balance, facilitating sensory integration in a natural and fun environment.
- ✿ New mulch can have a strong smell! If the smell bothers children, invite them to take a break to smell nearby flowers or plants such as lavender or roses, if this is something they like. Wearing a mask will block smells. Another option for children who dislike the smell of mulch is to invite them to help with other tasks, such as bringing bags of old mulch to the compost bin, if they need a break from the smell of the new mulch.
- ✿ Have water and shade nearby, especially if doing this activity in the summer sun.
- ✿ Bring a blanket or chairs outside during this activity for children to take a seat and rest if they feel tired.



Social/Emotional

- ✿ This activity can be a lot of work for children, so make sure to implement breaks throughout the activity.
- ✿ If done in a group setting, allow children to choose a job they are interested in and comfortable with. Some children can help with transporting mulch, some can help scoop it, and some can help spread it around the garden.
- ✿ Invite children to acknowledge their own hard work and provide verbal encouragement to their peers during this activity. Ask them to express one thing they did well during the activity, and one thing a peer did well!



Hand Watering



Water is essential for a healthy garden. That said, both too much and too little water can significantly impact plant growth. Teaching young gardeners how to recognize when plants need water and how to use proper watering techniques is one of the keys to growing a flourishing garden. Watering by hand is the most basic method for providing plants with supplemental water when rainwater doesn't suffice. In this activity, children will discover how to tell when plants need water and learn how to water their plants by hand.

Below you will find a list of developmental skills that hand watering can address. In the instructions, you'll find ideas for modifying the activity to make it accessible to learners who may have specific physical, cognitive, sensory, and social/emotional needs. This resource is designed to help ensure all children in your program can engage with and have fun in the garden.

WHAT SKILLS DOES THIS ACTIVITY SUPPORT?



Physical – Gross motor skills, gross strength, grip strength, motor planning, coordination, bilateral skills, co-contraction, range of motion, strength, balance, hand eye coordination, visual perceptual skills



Cognitive – inhibition, attention



Sensory – sensory processing, tactile, proprioception, and vestibular senses



Social/Emotional – patience, perseverance



Materials

- Outdoor water source (generally a spigot/hose bib)
- Watering can with sprinkler head or hose with adjustable nozzle

Optional materials for activity modifications: Single-use plastic water bottle (to make [DIY squeezable watering can](#))

Planning Ahead

- **Gather equipment.** If you'll be using watering cans, keep in mind that water weighs about 8 pounds per gallon. Be sure to choose a watering can that is sized for your young gardeners. Ideally, the watering can will have a sprinkler head (also called a rose) that applies a gentle shower. If using hoses, select adjustable spray nozzles that allow you to start and stop the flow and that offer a range of volume and pressure options. Note the location of the outside water source nearest the garden. If there is no outside source, determine how you will transport water from an indoor source.
- **Learn how to identify when gardens need watering.** The easiest way is to test the soil for moisture by inserting a finger about an inch into the soil to see if it feels moist or dry. Another method is to insert a long screwdriver into the soil; it will pass easily through moist soil, but will be difficult to push into dry soil. For vegetable gardens, it's time to water when the top inch or so of soil is dry. Keep in mind that it's best to water plants before they show signs of water stress, such as wilting leaves and bending stems; if you see these signs, water immediately! Remember that applying too much water or watering too frequently can lead to root rot.
- **Time the activity.** Choose a time when rainfall has been inadequate for plants. You want to apply water only when plants need it, rather than on a set schedule. This prevents overwatering and conserves this precious resource.

Activity Instructions

1. Help children identify the areas in your garden that need watering.
2. If you are using a watering can, carry it to the water source. Hold the watering can beneath the spigot. If there is a hose attached to the spigot, aim the nozzle of the hose into the opening of the watering can. Turn the faucet on and fill the watering can with the appropriate amount of water. **Note:** The more water you add to the can, the heavier it will be for a child to carry.
3. Carry the watering can to the garden. For better balance, if it feels heavy, grasp the watering can by the handle with one hand and place the other hand under the can to support it.
4. Hold the watering can about 6" above the soil around the plant you want to water. Aim the spout toward the soil at the base of the plant, then slowly tilt the watering can downwards. This ensures that the water is applied directly to the soil where plants need it. It also helps keep foliage dry, minimizing disease problems. Hold the watering can steady and continue tipping it downward until water begins flowing onto the soil.

Activity Instructions

5. Water the plant for the appropriate amount of time. This may vary by plant and soil type! Smaller plants in heavy soils may only need about 10 seconds of watering, while larger plants may need closer to 15-20 seconds or longer. You can insert a finger or a screwdriver to determine if water has moistened the top few inches of soil. Stop watering the plant by returning the watering can to an upright, level position.
6. Continue this process for all plants that need watering. If you are watering many plants, you may need to refill the watering can multiple times.
7. If watering with a garden hose, grasp the nozzle (or the end of the hose) before turning it on. Be sure to set the nozzle to a gentle stream or shower setting so the plant does not get damaged by the water's force. While holding the nozzle steady and pointed away from you, grasp the faucet handle and turn it to the left. Test whether the water is flowing through the hose by squeezing the nozzle handle and watching for water to come out. Let go of the nozzle handle to stop the water flow.
8. Bring the hose to the garden. Aim the nozzle at the soil as the base of the plant you are going to water.
9. Squeeze the nozzle handle to produce a gentle stream of water that flows over the soil around the base of the plant. Continue squeezing the nozzle handle to water the plant for the appropriate amount of time, then release the handle to stop the flow.
10. Continue this process until you have watered all the plants.

How to Modify this Activity for Different Learners' Needs



Physical/Motor

- ✿ Fill the watering can halfway if it is too heavy for children to carry around the garden.
- ✿ Try using different types of watering cans or DIY options. If a standard watering can is too heavy or difficult to hold, you can use a small cup to water your plants. You can also make your own [DIY watering cans](#) from plastic water bottles, or purchase a lightweight option that's easy to squeeze with one hand.





Physical/Motor

- ✿ If the hose nozzle is difficult to squeeze, take it off and invite children to water plants with a slow flow of running water from the hose, being mindful of over-watering.
- ✿ Talk with children about proper body mechanics to prevent injury when watering. Model how to bend at the hips and knees when holding something heavy, like a watering can, rather than bending over with knees straight, which can strain the back.



Cognitive

- ✿ Discuss with children the potential problems of overwatering plants and count out loud with them the amount of time they need to water each plant.
- ✿ Support success by adding structure to the activity. Pick one row to start watering in and work your way forward/back or across the rows. This is a good way to help children stay organized and focused on the activity, and ensures each plant gets watered, and children are pleased with their efforts to complete the task.
- ✿ Encourage children to practice problem solving and their compare-and-contrast skills. For example, ask children to compare different sized plants and decide which one they think needs more water.



Sensory

- ✿ This activity can get muddy! Offer children the option to wear rain boots or old shoes to prevent their socks and shoes from getting wet and muddy.
- ✿ Provide gardening gloves for children who want to avoid getting their hands dirty or wet while using the hose or watering can.
- ✿ For children who trend towards sensory craving, doing “heavy work” like carrying the filled watering can provides calming proprioceptive sensory input.
- ✿ Have potable drinking (not hose!) water and a shady spot to rest readily available for children if you are hand watering on a hot day!



Social/Emotional

- ✿ Hand watering is a great way to practice taking turns and promotes teamwork amongst children. If you only have one watering can or hose, encourage children to take turns using it. You can also encourage teamwork by having two children carry the hose or watering can if it is heavy.
- ✿ Establish expectations and boundaries before starting the activity so that all children feel safe. Make sure you explain to children that the hose water is just for the plants today and not to spray other friends.
- ✿ Encourage children to suggest their own expectations for the activity, encouraging boundary setting and decision making.
- ✿ After the plants are watered, encourage children to say one thing they did well during the activity and one thing they saw a friend do well. Examples could be children demonstrating sharing, turn-taking, being patient, encouraging others, etc.



Harvesting



Harvest is an exciting time for children as they get to pick and enjoy the produce they worked hard to grow in the garden. Children who help grow and harvest produce may even be more excited to eat it compared to what comes from the store.¹ In this activity, children will learn how to harvest and wash food from their garden.

Below you will find a list of developmental skills harvesting can address. In the instructions you'll find ideas for modifying the activity to make it accessible to learners who may have specific physical, cognitive, sensory, and social/emotional needs. This resource is designed to help ensure all children in your program can engage with and have fun in the garden.

WHAT SKILLS DOES THIS ACTIVITY SUPPORT?



Physical – Range of motion, coordination, fine motor skills, digit opposition, bilateral coordination, grip strength, hand eye coordination



Cognitive – inhibition, attention



Sensory – sensory integration, proprioception, vestibular and tactile skills, interoception



Social/Emotional – patience, perseverance



Materials

- Harvest-ready produce
- Sink with running water
- Food-grade soap
- Food-grade containers or food-grade plastic bags
- Scissors
- Paper towels and cloth kitchen towels
- Scrub brush
- Clean gloves



Planning Ahead

- **Determine what's ready to harvest.** Survey garden plants before the activity and decide which crops you'll be harvesting. Research the best way to pick them, as different fruits and vegetables require different harvesting methods. This may include plucking from the branch with your fingers or cutting off a stem using a knife or scissors (the latter should be done by adults or with close supervision).
- **Research storage techniques.** Some crops should be washed right after harvest and before storage; others should be stored as is and washed just prior to use. Research the best storage temperature — some crops should be refrigerated, and some stored at room temperature.

Activity Instructions

1. **Adults:** Ensure all children participating in harvesting produce are feeling well and have no open cuts or sores on their hands or arms. Thoroughly wash hands with soap and clean water, and dry hands with a towel. If handwashing is not an option, children can wear clean gloves.
2. Lay out paper towels on a counter or table.
3. **With adult supervision:** If using a reusable food-grade container to harvest, wash it beforehand using warm, soapy water and let it dry. Also, wash and dry any harvesting tools beforehand.
4. Share with children what produce they are going to harvest and explain the best way to pick it. **We recommend that adults complete harvesting that requires a knife or scissors, or provide direct supervision to children using these tools.**
5. Harvest your produce by removing it from the plant's stem or branch. For fruit, such as berries, use your fingers to remove them from the tree, vine, or bush. Gently grasp the berry with your fingertips while steadying the branch it is attached to with your other hand. Lightly twist the berry with your fingertips to carefully remove it from the branch. Place the harvested produce in a washed container or clean bag.



Activity Instructions

6. Carry the container or bag inside. Take out the harvested produce and set it on the paper towel-covered table. Gently rub off any excess soil or debris using paper towels.
7. Explain to children that all crops will be washed. Some will be washed now, and others will be stored as is and then washed just prior to use.
8. To store crops as is, place the produce in a new, clean plastic bag or a clean, dry container. Place the produce on the counter or in the refrigerator, depending on the crop's optimal storage temperature.
9. When it's time to wash your harvest, use clean, running water that is no more than 10 degrees cooler or warmer than the temperature of your produce. Rinse the produce in the sink for around 60 seconds, or soak it in a large bowl with enough water to cover it for 1 to 5 minutes, until all the soil and debris have sloughed off. Use a scrub brush to remove any remaining soil and hard skin from produce such as potatoes or carrots.
10. To help prevent mold and bacterial growth, thoroughly dry the produce with a clean kitchen towel. Store the precious produce at the appropriate temperature.
11. Eat now or when you are ready. Enjoy!

How to Modify this Activity for Different Learners' Needs



Physical/Motor

- ✿ If fine motor skills like pinching to harvest produce is difficult, provide hand-over-hand assistance to children by gently placing your hand around theirs and lightly guiding their hand to help pinch and remove produce.
- ✿ If the produce bucket/bag is too heavy to carry while harvesting, adults can carry a common bucket for children to place their harvested produce in.
- ✿ Children can use a strainer to hold the produce under running water, rather than holding and washing or scrubbing each fruit/vegetable individually. **Adults should decide whether the produce still needs further scrubbing to be clean.**



Physical/Motor

- ✿ If skills like gripping and pinching are difficult, help children scrub produce by holding the vegetables for them so they can focus on scrubbing. Make the handles of vegetable scrubbers larger and easier to grasp by wrapping them in sticky medical tape, or purchase a vegetable scrubber that slips over the finger and may be easier for some children to use.



Cognitive

- ✿ Talk about and give a physical demonstration of how to harvest produce properly. Include tips like avoiding pulling on branches or squeezing fruit too hard when removing it from the branch.
- ✿ Help children stay engaged and attentive during this task by timing it right. If children are tired or antsy by the end of the day, aim to harvest at the beginning of the day when it might be cooler.
- ✿ Another way to help increase engagement with harvesting is to make it into an “I spy” game! Cue children: “I spy a red fruit that is small and round” to help them spot and harvest a ripe tomato.



Sensory

- ✿ Provide gloves for children who want to avoid getting messy from produce juice, sticky residue, or soil.
- ✿ Encourage children to be aware of their senses during this activity! What do you smell while harvesting? What color is the produce? What does the produce feel like? Is it soft, firm, fuzzy, or smooth?
- ✿ Invite children to eat the produce (after washing) to engage their sense of taste. Ask them what it tastes like! Is it sour or sweet? Crunchy or soft?
- ✿ While harvesting, encourage children to reach up and down and side to side with their arms and hands, which provides vestibular sensory input. Another way to increase vestibular and proprioceptive input is by inviting children to stand on one foot while harvesting produce!
- ✿ Respect children’s preferences for touching and interacting with produce or to eat it or not. Children who trend towards sensory avoiding behaviors may not be as comfortable with touching or smelling different fruits or vegetables.



Social/Emotional

- Some children may benefit from having a structured timeline for this activity. Let students know in advance that you will be harvesting for 30 minutes (or however long you choose). Cue them when they are halfway through and when you have 5 minutes left. You can use your voice or a pleasant timer sound. This strategy may help children avoid feeling the need to rush through the activity. Time cueing also provides a predictable structure for an activity that doesn't have a specific endpoint.
- Let children engage with harvesting at their own pace and comfort level and provide opportunities to participate in the activity without directly interacting with produce, like holding and carrying the bucket or just watching.
- At the end of the activity, invite children to reflect and share about their harvesting experience. Encourage them to consider what they learned about teamwork during this activity, one thing that thought went well, or something new they learned.

¹Holloway, Timothy P., et al. (2023). School gardening and health and well-being of school-aged children: A realist synthesis. *Nutrients* 15(5), 1190, <https://doi.org/10.3390/nu15051190>.



Garden Journaling



Gardening journaling is an activity focused on spending time in the garden with the specific purpose of recording observations, feelings, thoughts, and pictures, either orally or in written form. Garden journaling is a great way for children to unplug, get some fresh air, and connect with nature and their feelings. Garden journaling should be adapted to each child's development level and skills. Depending on the child, garden journals may be a collection of drawings, a recording of simple words, or in paragraph form for more advanced youth. Journals can also be transcriptions of oral observations, written with the help of adults or youth assistants.

Below is a list of developmental skills that garden journaling can address. In the instructions, you'll find ideas for modifying the activity to make it accessible to learners who may have specific physical, cognitive, sensory, and social/emotional needs. This resource is designed to help ensure all children in your program can engage with and have fun in the garden.

WHAT SKILLS DOES THIS ACTIVITY SUPPORT?



Physical – Fine motor skills, in-hand manipulation, gross motor skills, visual perceptual skills, hand eye coordination



Cognitive – attention, compare and contrast, memory



Sensory – sensory processing, tactile, visual, auditory, proprioceptive, and vestibular senses



Social/Emotional – creativity, patience, perseverance, socialization



Materials

- Notebook or pieces of paper with a clipboard
- Pencils, pens, markers, crayons, and/or colored pencils
- Phone or voice recorder
- Garden space
- Table



Planning Ahead

- **Decide how you'll convey the instructions.** This will depend on the children's ages and abilities. You can print them out and distribute them as a step-by-step reference guide for children to read and follow. You can attach them to each journal page for easy reference and a reminder. Alternatively, you can read each prompt to children at the appropriate time.
- **Prepare to offer guidelines.** These might include not touching insects or other creatures, moving rocks or other items, not venturing beyond a defined area, etc.
- **Plan for adult supervision.** If needed, recruit adults who can provide direct supervision to all children when they are walking around and observing a larger garden or outdoor area.
- **Get inspired, so you can inspire your young journalers!** Check out these articles: [Garden-Inspired Writing](#), [Nurturing Creativity in Kids](#), [Writing Prompts for Storytelling in the Garden](#)

Activity Instructions for Journalers

1. Gather materials for garden journaling and head outside to the garden space.
2. Take 3 to 5 minutes to simply observe the garden. You can sit in one spot or move around. If your teachers say it is okay, you can pick up objects like stones, or bend down or reach up to get closer to plants to take a closer look and smell. Think about engaging your senses! What smells, sounds, colors, and textures do you notice in the garden? Try to notice any feelings you have during this observation time.
3. Once you're done observing, find a comfortable place to sit or lie on your belly and journal.
4. Decide what you want to journal about today. Did a plant catch your eye, and you want to describe the color and smell of it? Did you see a new type of animal in the garden and want to write all about it? You can even journal about your experience observing nature, including what you saw and felt.



Activity Instructions

5. Start by drawing a picture of what caught your eye during observation time. Whatever you draw is a work of art! Try to incorporate different colors, and don't be afraid to take up as much space in your journal as you need to draw your picture.
6. Describe your picture by writing about it in your journal or talking about it to your teacher. What interesting things do you notice about this plant, animal, rock, etc.? You or your teacher can write down your thoughts on the same page as your picture using arrows to connect the words with your drawings, or you can write a few sentences about your picture on another page.
7. If you don't want to draw a picture, you can simply write down or tell your teacher what you observed in nature. What did your 5 senses pick up on? What feelings did you have in the garden? Did being in the garden make you happy, curious, excited, or calm?
8. Journal for as long as it feels right for you. If you can, try to spend at least 5 minutes reflecting and writing in your journal.
9. If it feels right, share what you wrote about in your journal with others and listen to your friends' journal entries. Be sure to say kind things.

How to Modify this Activity for Different Learners' Needs



Physical/Motor

- ✿ If fine motor skills like writing and drawing are difficult, children can collect garden materials and tape or glue them into their nature journal. Since we don't want to encourage children to pick growing plant material, encourage them to find loose objects on the ground, such as fallen leaves, flower petals, seeds, small pebbles, or twigs.
- ✿ If children have difficulty grasping writing utensils, make them larger and easier to use by wrapping them in sticky medical tape or rubber bands.
- ✿ If navigating or exploring the garden space is hard, bring garden materials to the children! Adults can pre-gather and lay out garden materials for them to interact with, such as leaves, flowers, rocks, twigs, etc.
- ✿ Bring chairs, pillows, towels, and blankets outside for children to comfortably sit or lie on while journaling.



Cognitive

- ✿ Make this task simpler and more manageable for children by providing them with specific instructions when observing and exploring the garden space. For example, invite them to find a flower to journal about, rather than having them explore the garden and then decide on a topic to write about.
- ✿ Another way to make this task easier is to provide children with a garden journal prompt, rather than asking them to decide what they want to write about. Be sure to make your prompts fun and playful. [See here](#) for some fun garden-based storytelling writing prompts.
- ✿ Although you don't want to rush children through this activity, providing gentle structure can be helpful to accomplish the task for those with attention challenges. Talk with children about a plan to observe the garden for around 3-5 minutes, then journal for another 5 minutes. Provide gentle cueing when they have 3 minutes left to observe nature. You can always increase the time if your children seem to want and need it. You may want to play soft music when it's time for them to start journaling, and then turn it off when they find a spot to sit and start journaling.



Sensory

- ✿ Garden journaling provides a great opportunity for multisensory enrichment. While children are walking around observing the garden, encourage them to bend low down to the ground to observe plants or stand on their tip toes to get a closer look at the taller plants, to gently touch them, look at them and even listen to hear if they are 'saying' something.
- ✿ If children are having trouble getting their journal entry started, invite them to find a plant and describe it to you. These observations about color, shape, texture, are great ways to engage the visual and tactile sensory systems and jumpstart ideas for their journal entry.
- ✿ Have children lie on their bellies (on a blanket or towel if they choose) while writing in their journal outside. This is a great way to provide calming proprioceptive and vestibular sensory input.
- ✿ Adding weight to a pen or pencil can help provide proprioceptive sensory input, making it easier for some children to write with. Some DIY ideas to add weight to a writing utensil include taping/gluing small items like pennies or washers to the top of it, then covering it with medical tape.



Social/Emotional

- ✿ Encourage children to practice identifying emotions by inviting them to add one feeling word to their garden journal. For example, they could start off their journal entry with “Today I am feeling ...”
- ✿ If children are comfortable with sharing their garden journal, ensure the space is welcoming, as sharing journal entries can feel vulnerable. Invite children to listen closely while friends are sharing, and encourage them to offer words of encouragement to their friends after they share.
- ✿ Remind children that everyone's garden journal will be different, and there are no right or wrong ways to complete a garden journal. The first time, it may feel like learning a new skill, like riding a bike. Whatever they feel comfortable writing, drawing, or sharing is okay, and giving it their best try is what counts.



Data Collection



Collecting data in the garden is a great way to practice basic math and science concepts in a practical way, while also learning more about living systems and nature. Data collection demonstrates to children how the scientific method can be used to answer questions and reach conclusions. In this activity, young gardeners are encouraged to be curious and then follow the steps of data collection to discover answers to their questions — just like a true scientist!

Below is a list of developmental skills that data collection can address. In the instructions, you'll find ideas for modifying the activity to make it accessible to learners who may have specific physical, cognitive, sensory, and social/emotional needs. This resource is designed to help ensure all children in your program can engage with and have fun in the garden.

WHAT SKILLS DOES THIS ACTIVITY SUPPORT?



Physical – Fine motor skills, coordination, hand eye coordination, visual skills, motor planning



Cognitive – attention, compare and contrast, memory, planning, problem solving, sequencing, executive functioning



Sensory – sensory processing



Social/Emotional – communication, emotional regulation, patience, perseverance, resilience, teamwork, cooperation



Materials

- Pen or pencil
- Notebook
- Clipboard
- Recording device or smartphone
- Calculator, ruler, scale, and/or other measuring devices as needed
- Garden supplies needed for experiments, such as gloves, pots, soil, watering can, seeds, shovels, trowels, and rakes



Planning Ahead

- **Decide how you'll convey the steps to a meaningful scientific exploration.** Scientists follow a series of steps, sometimes called the scientific method, to investigate questions, test ideas, and increase their knowledge of the world around them. Steps include asking a question, conducting background research, formulating a hypothesis, designing and conducting an experiment, analyzing the experimental data, drawing conclusions, and communicating the results.
- **Decide how you'll convey the activity instructions.** This will depend on the children's ages and abilities. You can print them out and distribute them as a step-by-step reference guide for children to read and follow. Otherwise, you can read each prompt to children at the appropriate time.

Activity Instructions for Data Collectors

1. Decide what you want to collect data on. Choose a gardening topic that interests you or something that you have always wanted to learn more about.
2. Think of and then write or record a question about your topic of interest. This question can be simple, like "Does the amount of sunlight a sunflower seedling gets impact how tall it grows?" or "How much water do my sunflower seedlings need each day?"
3. Gather information on your topic to help you collect data and answer your question. For example, use books or the internet to research how much sunlight or water a seedling typically needs or what other factors impact how tall a plant can grow.
4. Design an experiment to investigate your question. Decide what your variables are. Variables are factors that can impact the result of your data collection process and may be informed by your research. For example, variables in the previously discussed example may include how much water the sunflower seedling receives, what type of soil it grows in, and how many hours of daily sunlight it receives. Keep it simple by testing one variable at a time. If you decide you want to see how sunlight affects your plant, you will want to control the other variables, ensuring they stay the same for each plant so they don't affect your results. For this experiment, that means you will want to expose plants to different amounts of sunlight, but control the other variables by making sure they all receive the same amount of water and are grown in the same kind of soil.

Activity Instructions

5. Form your hypothesis. A hypothesis is your prediction of what will happen when you perform your experiment. For example, your hypothesis could be, “Seedlings that receive more than 6 hours of sunlight per day will grow taller than seedlings that receive less than 6 hours of sunlight per day.”
6. Gather the materials needed for your experiment. To collect data, you may need a variety of gardening materials depending on your question. For this particular experiment, items may include pots, potting soil, trowels, seeds, seedlings, and a watering can. Don't forget to gather materials for collecting data, including a notebook, pen or pencil, calculator, ruler, scale, etc.
7. Conduct your experiment and collect data. For the example experiment, that would be measuring the growth of the sunflower seedling. Many gardening experiments take place over a few weeks to see and record changes in your plants or whatever you are studying. Be patient and don't forget to make lots of subjective (opinion-based) and objective (measurable) observations during this step. For example, an objective observation is measuring the height of the plants with a ruler once a week for six weeks. An opinion-based observation might be that the seedlings look happy (or sad).
8. Analyze the data you've collected. Did you notice any patterns that occurred while you conducted your experiment? For example, does the data show that plants left in the sun for more than 6 hours a day grew 1 inch more per week than those that got less than 6 hours of sunlight each day?
9. Form a conclusion. This is the step where you consider if your hypothesis was right or wrong and answer your question using the facts (data) you recorded. An example is “Seedlings that received more than 6 hours of sunlight per day grew taller than plants that received less than 6 hours of sunlight per day.”
10. Share the results of your data collection with other friends. You can make a poster about your data collection findings, share it during sharing time, or write a story about it.



How to Modify this Activity for Different Learners' Needs



Physical/Motor

- ✿ If children have difficulty grasping writing utensils to record data, make them larger and easier to hold by wrapping them in sticky medical tape or rubber bands.
- ✿ If children have difficulty with fine motor skills, provide hand-over-hand assistance as needed during the data collection process by gently placing your hand around the child's hand and lightly guiding their hand while completing fine motor tasks like writing or holding the ruler.
- ✿ For children who use a wheelchair or prefer to garden from a seated position, a great option for collecting data is container planting. Another option if children are gardening outside is raised garden beds that provide roll under capacity for hips and knees.



Cognitive

- ✿ When collecting and analyzing data, help children graph measurements using a line graph or bar chart. A visual depiction of the data collected may help them find patterns and make inferences more easily than looking at a list of numbers.
- ✿ Teach children about the scientific method and the different steps before doing this activity. Explaining why it is done and the importance of each step of the experiment can help them apply skills such as planning, problem-solving, and sequencing to the activity.
- ✿ Before starting the experiment, make a checklist of the different steps to complete, and invite children to check them off as they are complete. This may help the data collection process move efficiently, and support children in sequencing through the different steps with less help from others.
- ✿ Help keep data collection materials organized when recording data by labeling them. For example, if you are tracking the height of different plants, label them plant A, B, C, etc.



Cognitive

- ✿ Setting timers is a great way to help children stay on task during the activity and can make transitioning between different steps feel easier and less abrupt. Don't rush children through this process, but providing gentle structure can help them complete the steps efficiently. Talk with children about a timeline plan for collecting data and provide gentle cueing when it's almost time to move to the next step. You can always increase the time if your children seem to want and need it. You can play music when it's time for them to start wrapping up one step, then turn it off when they are ready for the next.



Sensory

- ✿ Invite children to write their questions, observations, and record data while lying on their bellies. This provides tactile, vestibular, and proprioceptive input.
- ✿ Encourage children to engage their senses while making subjective observations during data collection. They can record what they see, smell, and touch.
- ✿ Since data collection may be a long process, take time for sensory breaks if completing multiple steps in one day. Depending on your children's needs, initiate games like freeze tag or Simon Says for a sensory/movement break, or provide a few minutes of quiet time with the lights lowered (if indoors) and play calming music.



Social/Emotional

- ✿ If doing this activity with many children, have them work in partners or as small teams. Data collection has a lot of steps, and it is a great way for children to practice teamwork and communication. You can also facilitate teamwork and help children practice responsibility by inviting them to take on different roles such as “materials manager”, “data recorder”, and “experiment master.”
- ✿ Explain to children that it is okay if their hypothesis was incorrect after collecting data. The goal of data collection is simply to learn something new and answer questions!
- ✿ Data collection takes a lot of perseverance, resilience, and patience. Be sure to provide verbal encouragement to children throughout the entire experiment and acknowledge their hard work.

Adaptive Gardening Tools



DIY! Common Household Items for Gardening Modifications

Below are some suggested ways to use or modify common household objects to support children's independence in a variety of garden activities!

- To scatter seeds in a garden, put them in a clean, empty spice shaker. Then, shake the seeds out over the garden bed to distribute them.
- To make a homemade squeezable seedling watering can, use a paper clip to poke holes in the cap of a single-use plastic water bottle. Fill the bottle with water. Children can then tip the water bottle slightly and squeeze to release a small stream of water.
- Use a mug to scoop or dig in the soil. The handle of a mug may be easier to grasp than that of a standard gardening tool.
- Lengthen garden tool handles like trowels by attaching them with duct tape to a broom handle or piece of PVC pipe, so children can more easily reach down to dig in the soil. Make sure to test the sturdiness of these tools before having children use them.
- If gardening gloves are not available, use disposable gloves to keep your hands clean while digging in the soil.
- If you don't have seed starting trays available, use an old egg carton. Be mindful of over-saturating the egg carton with water, as it could break down if it gets too wet.
- Lay a beach towel, pillowcase, or a piece of cardboard on the ground as a homemade garden kneeler to prevent getting dirty or reduce pressure on the knees.
- Enlarge the handles of garden tools to make them easier to grip by wrapping them in sticky medical tape or rubber bands.
- Tie brightly colored ribbons or highly textured string around garden tool handles to help learners who have low vision see and keep track of items.
- Make garden tools heavier by taping pennies or washers to the tip of the handle and covering them with sticky medical tape to hold them in place.
- As a first step, when washing harvested produce, place it inside a kitchen strainer to rinse instead of washing each vegetable or fruit individually. A more thorough rinse is recommended after using a strainer to clean produce.

Adaptive Gardening Tool Examples

Below are some pictures and links to helpful tools you can purchase to support children's independence and participation in garden activities such as watering seedlings, planting or weeding outside, and harvesting produce.*

These products are provided as a visual representation and starting point for adaptive tool shopping. KidsGardening does not endorse or sponsor any of the products included here. Please do your own research as a consumer before purchasing any products.



Seedling Watering Can



Adaptive Scissors



Adaptive Gardening Tools



Produce Scrubber



Foam Handles



Garden Kneelers



Reacher



Lightweight Watering Can



Seed Sower