

***Plant Protectors Research Rangers* nature exploration 5E Lesson Plan**

Focus Science TEKS: 3.11A & 3.12C & 4.13A (with opportunities for 2.12A, 2.13A, 4.12A)

Day 1: Engage

Guiding Question: What is the relationship between a structure and its function?

Time Needed: 45-60 minutes with Literary Integration introduction

Classroom setup: Indoor lesson day; recommended setup is to have students in groups of two-four to facilitate discussion. This lesson plan is optimized to support classrooms divided into 8 student working groups for each activity.

Materials: *Plant Protectors Research Rangers* nature exploration booklets (1 per student) [digital copy available here: <https://researchrangers.wp.txstate.edu/> direct link: <https://researchrangers.wp.txstate.edu/files/2026/08/Research-Rangers-Plant-Protectors.pdf>], pencils, clipboards (*optional*), physical or model plants/plant parts or images of plants, magnifying glasses (*optional*), Read aloud book: *Queen of Leaves* by Stephen Briseño (*optional*)

Activity:

1. [Approximately 10-15 minutes] **Literacy integration:** Read the *Queen of Leaves* aloud to students and encourage questions from students during and after the reading. (alternative title suggestions provided in the lesson modification below). Students may be likely to ask questions such as: Why would she collect so many species? What is the official plant of our state? What do wax palms feel like? Teachers may want to provide students with guiding questions to help them focus and listen to the story.
2. [Approximately 10 minutes] Begin by introducing the *Plant Protectors Research Rangers* nature exploration booklet. Have students follow along in their booklet. Explain to the students that they will be working as botanists (scientists who study plants) to complete this booklet over the next five days. Go over the introductory information on page 2 of the booklet. And use the information on page 3 to prepare students for what to expect from the activity. Review safety expectations, emphasizing the importance of using safety when touching unknown plants. And **review and define the “Words to Know”** on page 4 of the activity booklet with the students [**Structure** and **Function**]. Use an Oak tree example to help ground the definitions. Then, have students provide additional examples, if they can.

3. [Approximately 10-15 minutes]: Provide students with plant tangibles to explore. Teachers can provide around 8 physical examples of plants. Suggested examples of plants to include can be found on page 15 of the *Plant Protectors* Research Rangers nature exploration booklet. Magnifying glasses make great observational tools for students to investigate the smaller details of the plant structures! Students can 1) pass plant samples around, 2) move around the room to look at different plants set up at tables, or 3) engage with a mini set of all samples per table/team. Allow students to work in teams of 2-4 as they touch, smell, and observe the examples. Ask students to describe what they see, make personal and relevant connections to the plants, and think about questions they have about the plants. Ask students to consider what structure(s) they are observing on each plant, what functions each structure may serve for each plant, and encourage students to share their wonderings aloud with their team, and later the full class.
4. [Approximately 10-15 minutes] After engaging with and discussing the teacher-provided plant samples as a class, allow students time to review the *Plant Protectors Matching Game* at the bottom of “Engage with Nature” page 4 of the booklet. Allow students time to discuss their answers with their groups when they are finished. *Teacher tip:* Have students circle the plants and number each one to better describe the matches.
5. [Approximately 5-10 minutes] Move on to page 5. Guide students through the dandelion example, fun facts, and the questioning section. Ask students to consider and write down at least one question about plant adaptations they may be interested in learning about or exploring, connected to the provided theme at the bottom of page 5. Then have students share and discuss their questions with the class.
6. Remind students that tomorrow they will be going outside and should wear closed-toed shoes!

Potential Alternative Conception Students May Hold: All flowers have the same parts, which may vary in size and color (structures).

- Topsakal, U. U., & Oversby, J. (2012). Turkish student teachers’ ideas about diagrams of a flower and a plant cell. *Journal of Biological Education*, 46(2), 81-92.

Potential Lesson Modifications:

- If whole plants are not accessible, parts of plants can be used for this activity instead. Likewise, if physical, living plant specimens are not available, teachers can

instead use reusable models of plants or pictures of example plants—specifically, photos showing the full plant, with and without clearly visible adaptations (example visuals: <https://researchrangers.wp.txstate.edu/files/2026/04/Research-Rangers-Example-Plants.pptx>). Examples used do not have to be appropriate for the local ecosystem as this engagement activity is intended to introduce students to observing different structures of plants.

- Suggested plants/plant parts for engagement include examples with: Thick or very thin leaves, tubers (like potatoes), bulbs (like onions), waxy coatings, spines/thorns, sticky surfaces (like Venus fly traps), or tendrils (like on Ivy or grape vines).
- It is recommended that live plants used for this engage activity are also integrated into the later garden bed planting activity on Day 5 of this lesson.
- Suggested water-wise plant list for garden (TX Native species):
 - Blackfoot Daisy (*Melampodium leucanthum*)
 - Firewheel (*Gaillardia pulchella*)
 - Frogfruit (*Phyla nodiflora*)
 - Gregg's Mistflower (*Conoclinium dissectum*)
 - Mealy Blue Sage (*Salvia farinacea*)
 - Prairie Verbena (*Glandularia bipinnatifida*)
 - Purple Coneflower (*Echinacea purpurea*)
 - Texas Blazing Star (*Liatris mucronata*)
 - **Alternatives** if any of the above plants are not available: Turk's cap (*Malvaviscus arboreus* var. *drummondii*), Rock rose (*Pavonia lasiopetala*), or Straggler's Daisy (Horseherb) (*Calyptocarpus vialis*)
- Other optional Read Aloud suggestions:
 - *A Weed is a Flower: The Life of George Washington Carver* by Alik
 - *Gregor Mendel: The Friar Who Grew Peas* by Cheryl Bardoe

Day 2: Explore

Guiding Question: What plants and adaptations can be found around our school yard?

Time Needed: 45-60 minutes

Classroom setup: Activity steps 1-3 take place inside. Then, in Step 4, students explore the schoolyard/local green space outside before returning inside for Steps 5-6. Note: Try to identify a suitable outdoor area that contains a wide variety of plant types to direct students toward, prior to the exploration activity.

Materials: *Plant Protectors* Research Rangers nature exploration booklets, pencils, clipboards (*optional*), optional technology (iPads, smartphones), Texas wildflowers field guides (*optional*), magnifying glass (*optional*)

Activity:

1. [Approximately 10 minutes] Have students review the example plants and adaptations provided in the booklet field guide on pages 6-7. In groups of 2-4, have the students share observations about the included examples.
 - a. *Guiding Questions: "What plants do you see on the field guide that match what you have seen in the area where we live?" "What are other examples of these adaptations that you have seen before?"*

Then, read the descriptions of each plant as a group. Remind students that a drought is a period with little to no rain and encourage students to emphasize the differences between the drought-adapted plants on the left and their non-adapted partners on the right.

2. [Approximately 5 minutes] Review the information found on page 8 of the *Plant Protectors* Research Rangers nature exploration booklet and discuss plant safety and outdoor classroom expectations with students prior to the investigation.
3. [Approximately 5 minutes] Encourage students to revisit their initial questions written on page 4. Note that students may or may not actually be able to address these questions within the scope of the provided activity. Then, introduce students to the data collection table on page 9. Read through the investigation steps and expectations for collecting data. Review the example data provided to offer a model for how students should record their observations in the table. Allow time for students to ask clarification questions.

4. [Approximately 15-20 minutes] Go outside to collect data! Have students work in groups of 2-4 to explore the schoolyard and record their observations in the provided table. Each student should record their own data, even if they are working in a team. Students can use Seek (page 10) if allowed, and they have access to mobile technology (e.g., smartphone or tablet) or a field guide (e.g., Texas Wildflowers, Wildflowers of Texas) to help identify the plant species they find. Students may also want to use a magnifying glass as an investigative tool. Teachers can modify the data collection time as needed.
5. [Approximately 5-10 minutes] Return to the classroom and have each team share what they found with the class. Discuss their observations and encourage students to use vocabulary terms like “structure” and “function.”
6. [Approximately 5 minutes] End this day by highlighting the Scientist Spotlight on page 11. Read aloud the passage about Dr. Catalá, a real scientist who is currently working as a botanist! Encourage students to think about other botanists they may be aware of, and/or encourage them to think of other scientific questions that scientists might be able to explore related to plants. If time is limited, students can think about these prompts and share their ideas at the start of the next class period.

Potential Alternative Conception Students May Hold: Plants are not living; trees, grass, vegetables, and weeds are not plants; and mushrooms are plants.

- Anderson, J. L., Ellis, J. P., & Jones, A. M. (2014). Understanding early elementary children's conceptual knowledge of plant structure and function through drawings. *CBE—Life Sciences Education*, 13(3), 375-386.
- Barman, C. R., Stein, M., McNair, S., & Barman, N. S. (2006). Students' ideas about plants and plant growth. *The American Biology Teacher*, 68(2), 73-79.
- Fries-Gaither, J. (2010). Beyond penguins and polar bears: Bringing the polar regions closer to home. *Knowledge Quest*, 39(2), 34-39.
- Mason, L., & Boscolo, P. (2000). Writing and conceptual change. What changes? *Instructional Science*, 28(3), 199-226.
- Yangin, S., Sidekli, S., & Gokbulut, Y. (2014). Prospective teachers' misconceptions about classification of plants and changes in their misconceptions during pre-service education. *Journal of Baltic Science Education*, 13(1), 105.

Potential Lesson Modifications:

- While *Plant Protectors* focuses on drought-tolerant plant species, your school's local ecosystem may face different challenges. Feel free to focus on adaptations

that best meet the needs of your local environment. Other examples of adaptive environments may include: fire, cold, shade, water/aquatic, low nutrient/poor soil, high salt, or wind.

- If there are no outdoor spaces available for students to explore, teachers can have student take their Plant Protectors nature exploration home to observe plants available off campus (encourage students to consider observing plants found in a park, in flower pots, trees along a sidewalk, any grassy patch, or even flowers and vegetables found in a grocery or convenience store)
- Optional extension for a biology career awareness focus (particularly, if the students will be completing the nature observations outside of class time):
 - If the curriculum goal is to focus on plant-related or biology careers, then teachers may want to add an optional career poster activity after the Scientist Spotlight. Students can explore potential career options, create a poster about an interesting job they find, and share it with the class. Career posters can include prompts such as:
 - Write the name of the job across the top of the poster.
 - Draw a picture of yourself doing that job. Include the clothes you would need to wear and the tools you might need to use to do the job.
 - Why are you interested in this job?
 - What kind of training do you need to earn this job?
 - To help students get started on this activity, here are some potential career opportunities in the plant sciences: <https://www.ycp.edu/news/types-of-plant-science-careers>

Day 3: Explain

Guiding Question: What kinds of plants would thrive best in different environments?

Time Needed: 45-60 minutes

Classroom setup: Indoor or outdoor classroom setting

Materials: *Plant Protectors* Research Rangers nature exploration booklets, pencils, clipboards (optional), plant samples from prior lesson, read aloud book- *Plant Adaptations* by Andi Diehn

Activity:

1. [Approximately 10-15 minutes] Teachers can start by having students follow along in the *Plant Protectors* Research Rangers nature exploration booklet “Build Your Knowledge” pages 12-13. The teacher can read the content or have students take turns reading the sections aloud. Ask students to explain what is illustrated in the figure on the bottom of page 12 (showing some plants thrive in droughts, while others thrive in floods) and make predictions about what adaptations plants may need to thrive in either of those environments. Then, introduce how plants can change over time and develop adaptations by reading from page 13. Students can complete the maze by connecting the yucca plant to the underground water source as time allows. Teachers may want to draw connections between the maze game and the beneficial adaptation some plants have developed (such as deep roots) to reach groundwater in areas where water may be scarce. Teacher Tip: Place example plants from Day 1 back on the table to help with the “what if” scenarios and drawing connections between the plants and the content knowledge.
2. [Approximately 15-20 minutes] Student share out! Facilitate a class discussion on how the data the students collected (on page 9 of the nature exploration booklet) is connected to the content on adaptations. Encourage students to use the included vocabulary terms as they reflect on what kinds of environmental challenges their ecosystem may face. As a challenge option, students can also try to draw connections between differing environments and plant adaptations by considering “what if” scenarios:
 - a. Students may want to use reference books, such as *The Secret World of Plants* and *Disaster Zone Droughts*, to support their responses to these “what if” questions. It is recommended that teachers assign each student group one scenario to consider related to their assigned plant and have them share their ideas with the larger class.

- b. Encourage students to pick one of the plants they observed as a group and use evidence-based reasoning to predict how they think the plants they observed would fare in one of the following “what if” scenarios:
- i. What do you think would happen if the plant you observed had to grow in an area that was home to lots of animals that ate plants?
 - ii. What do you think would happen if the plant you observed had to grow in a very hot desert and received very little rain or shade?
 - iii. What do you think would happen if the plant you observed had to grow in a space near an ocean where it was very windy and salty?
 - iv. What do you think would happen if the plant you observed had to grow in an area that was very shady and received very little sunlight?
 - v. What do you think would happen if the plant you observed had to grow in soil that could not provide the plant with any nutrients (food)?
 - vi. What do you think would happen if the plant you observed had to grow in an area that had regular wildfires?
 - vii. What do you think would happen if the plant you observed had to grow in an area that was very cold most of the year, and the ground was usually frozen?
 - viii. What do you think would happen if the plant you observed had to grow completely underwater, like in a pond or stream?

Teachers may offer scaffolding to help students give responses to their scenario by providing them with this sentence prompt: We think the plant we observed would (grow better, grow worse, or grow the same – choose one) because... (encourage students to document what environmental conditions may impact the plant, such as temperature, precipitation, salinity, sunlight, nutrients, predation). Remind students that they do not need to have “correct” answers, but are focused on justifying their prediction based on their observations and current understanding.

3. [Approximately 20-25 minutes] **Literacy integration:** Read aloud the book *Plant Adaptations* by Andi Diehn. Encourage questions and regularly pause to discuss key content and vocabulary terms, and draw connections between the book and what students have experienced in class during the nature exploration.

Potential Alternative Conception Students May Hold: Plants do not compete for resources and can easily survive in any type of environment.

- Wynn, A. N., Pan, I. L., Rueschhoff, E. E., Herman, M. A., & Archer, E. K. (2017). Student misconceptions about plants—a first step in building a teaching resource. *Journal of microbiology & biology education*, 18(1), 10-1128.

Potential Lesson Modifications:

- To support students' use of evidence-based reasoning to consider changes in how plants may or may not thrive in different or changing environments, Teachers may wish to supplement the “what if” scenarios by directing students to the related Crash Course Kids, Little Green Thumbs, or Study Jams websites (links are all available on the back cover of the Plant Protectors Research Rangers nature explorations back booklet cover).
- If students are more advanced in their understanding of plant adaptations, teachers may also consider recommending that they check out a follow-up Research Rangers nature exploration activity, such as Prickly Potential or Tree Walk.

Day 4: Elaborate

Guided Question: How do people use plant adaptations in different ways?

Time Needed: 45-60 minutes

Classroom setup: Indoor or outdoor classroom setting

Materials: *Plant Protectors* Research Rangers nature exploration booklets, pencils, clipboards (optional), plant examples from Engage Day, computers/devices (optional), garden bed signs (½ sheet of paper, suggested to use card stock), markers/Sharpies, laminator (optional)

Activity:

1. [Approximately 5-10 minutes] Introduce the Cultural Connections content on page 14 of the *Plant Protectors* Research Rangers nature exploration booklet. Read aloud or have students take turns reading aloud the various ways people use plants like yucca, which are adapted to live in dry environments.
2. [Approximately 25-30 minutes] People also commonly include plants in gardens. Challenge the students to build a waterwise garden applying their knowledge of plant adaptations. Direct students to the Above and Beyond activity on page 15 of their booklet. Teachers can either assign one of the recommended plants to each student group or allow each student/group to choose their own plant that they think may be a good addition to a garden the class is planting at the school. Encourage students to choose and find more information about a local native plant species. This activity works best when each student/group chooses a different species to promote biodiversity in the garden (pollinators love to have options when visiting a garden for a snack).
 - a. The QR code provided at the bottom of page 15 in the *Plant Protectors* Research Rangers nature exploration booklet will lead students to the free Lady Bird Johnson Wildflower Center database of native Texas plants to help them get started with finding more information about their assigned/selected plant.
 - b. Tell students to use the database or other resource to read about their plant and fill in the table on page 15.
 - c. For a bonus challenge, have students find one fun or interesting fact they can find about their plant.
3. [Approximately 15-20 minutes] After students have completed their table, provide each group with a garden bed sign to decorate. Remind students that these signs

will be used to teach visitors to the garden about their plants. So, each sign should be neat, clear, colorful, and contain all the information from their table (plus their bonus fact if it was assigned and any optional decorations). The students will place these signs by their plant in the garden during the next class; thus, the teacher may want to laminate each sign after students have completed their work.

Potential Alternative Conception Students May Hold: All plants require the same amount of sunlight, water, and space to grow.

- Smith, E. L. & Anderson, C. W. (1984). Plants as producers: A case study of elementary science teaching. *Journal of Research in Science Teaching*, 21, 685-698.

Potential Lesson Modifications:

- The LBJ Wildflower Center has information about native plants in multiple regions, not just Texas. However, if a teacher wants additional resources to find examples of plants that are native to the area, the following websites are also useful (many require the local zip code):
 - National Wildlife Federation (NWF) Native Plant Finder <https://nativeplantfinder.nwf.org/> - ranks native plants by the number of butterfly and moth species they support
 - Audubon Native Plant Database <https://www.audubon.org/native-plants> - focuses on plants that provide food and habitat for local birds
- If a teacher is planning on having students plant a physical garden in the school yard on Day 5, they will want to make sure the intended plants are purchased (these plants can also be used earlier during the Day One Engage portion of this lesson plan) and the planter bed is prepared in advance. Students can plant native plants in an existing bed on the campus grounds, plant seeds in a designated native planting area (recommended to mark this area with “no mow” signs from March-June), or build a new raised bed. If electing to construct a new, raised garden bed, teachers will want to obtain enough materials for one 6’ square (either 6” or 1’ high) bed per class (of approximately 24-30 students). Each bed can be built using 4 or 8-6’ 2x6” boards (pre-cut from a lumber store) that are connected by 4 or 8 corner joints (such as <https://shorturl.at/WmlOG>; stack two on top of each corner for a 1’ tall bed). Stabilize each corner joint by hammering a ½" x 3’ long piece of rebar through the center hole. This design does not require any additional specialized tools, but it is recommended to be assembled on a level surface. Teachers may seek material donations from area lumber suppliers (such as Lowes, Home Depot, Ace Hardware) and/or nurseries (such as the lumber stores, local garden centers,

or tractor supply stores) to reduce lesson costs. Each garden bed should have a layer of cardboard placed directly on top of any grass, completely covering the bottom layer of the intended garden space. Then, teachers will want to fill the remainder of the bed with generic topsoil or gardening compost from a supplier, like Bobcat Blend (<https://ag.txst.edu/outreach/bobcat-blend.html>) - often cities will have a similar compost service. Please also see the lesson modification details on Day Five of this lesson for a non-physical paper garden option that the students can “plant” instead.

- For a literacy integration option, teachers may elect to include a read-aloud book that covers the cultural integration of plants, such as *The Legend of the Bluebonnet* by Tomie dePaola.

Day 5: (Continuation of Elaborate and) Evaluate

Guiding Questions: What actions can we take to help native plants grow at our school?

Time Needed: 45-60 minutes

Classroom setup: Indoor and/or outdoor classroom setting

Materials: *Plant Protectors* Research Rangers nature exploration booklet, pencils, clipboards (*optional*), *Plant Protectors* Research Rangers - Ranger Reflections worksheet [digital copy available here: <https://researchrangers.wp.txstate.edu/> direct link: <https://researchrangers.wp.txstate.edu/files/2025/12/Jr-Ed-Ranger-Reflections-Plant-Protectors.pdf>], rulers (*optional*), gardening resources (prepared garden beds, plants/seeds, gloves, spades, watering cans, garden bed signs, sign holders, tape, etc.), optional paper garden craft materials (construction paper of varying colors, scissors, markers, colored pencils, tape, glue, butcher paper, etc.)

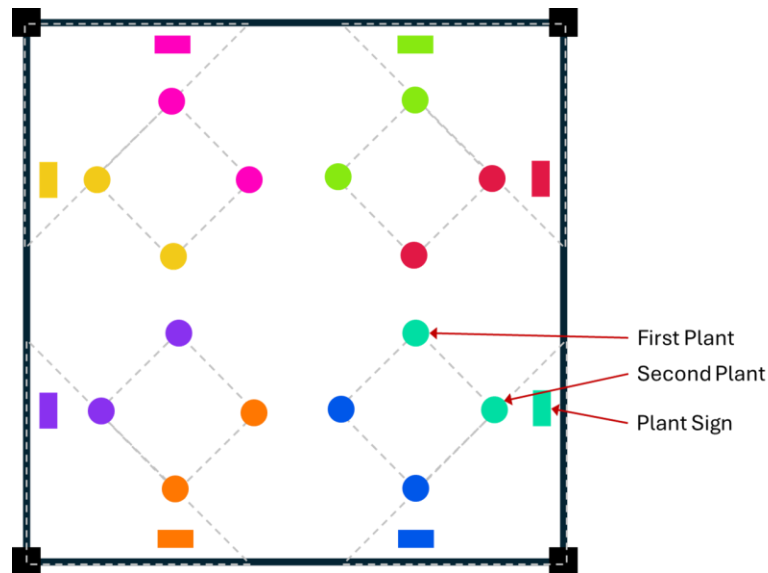
Activity:

It's planting day! Before you take the students outside to plant, please be sure to note that teachers should have the garden beds prepared in advance, as noted in the lesson modification notes provided on Day Four of this lesson plan. Also, selected plants or seeds to include in the garden should already be purchased and on hand for feasibility. Teachers are encouraged to communicate with gardening, tractor supply, and our lumber stores to ensure the intended plants are available, and potentially find ways to reduce material costs. It is highly recommended that teachers provide students with a preset list of plants pre-purchased as they investigate species and prepare for garden creation.

1. [Approximately 5-10 minutes] Provide student teams (the same teams they have been working in throughout the unit) with their plant, plant sign they designed, and any necessary planting materials (e.g., spade, gloves, sign stake). Review outdoor behavior expectations with the students and instructions on what they will be doing. Assign a designated planting location for each team in the garden to have them plant their plants and place their sign (facing outward so visitors can read the information).
2. [Approximately 20-25 minutes] Now it's time to get planting! Once outside, teach students to use gardening tools such as spades and gloves to properly plant their species. For a fun math challenge, you may ask students to use a ruler to estimate the space needed around their plant in order for it to fully grow and thrive. Each plant will have its own suggested spacing guidelines for how far apart individual plants need to be from each other when planted in a garden bed, but it is suggested

that students locate each plant about 8"-12" apart (this spacing will vary based on the number of plants and size of the garden bed, if using a 6' square raised bed each should accommodate up to 16 plants with these spacing guidelines). It is recommended to have each group plant one specimen toward the center first, then the second closer to the edge of the garden. This will prevent accidentally trampling plants and allow all species to be visible. (Using this approach in the recommended 6' raised bed will allow a distribution as shown in the example image).

- a. After placing their plants in the garden, have students secure their plant information sign on a stake next to their plants for visitors to learn and enjoy. Each sign should face outwards to allow guests to read the content.
- b. Example garden bed plant placement, organizing each student group by color. Teachers can opt to include a basic geometry lesson, or let students plant their species in the general area using a similar map. This is simply a generic guide for optimal plant placement for 16 plants in a 6' square raised garden bed.



3. [Approximately 20-25 minutes] After returning inside from planting, have students complete the summative Ranger Reflections Worksheet on their own.

Potential Alternative Conception Students May Hold: People are not a part of the ecosystem, and children cannot make a significant difference in their local environment.

- Trefil, J., Calvo, R., & Cutler, K. (2006). *McDougal Littell Life Science*. Evanston, IL: Houghton Mifflin Harcourt.
- Iliopoulou, I. (2018). Children's thinking about environmental issues. *Educational Research*, 60(2), 241-254.

Potential Lesson Modifications

- If there is not enough space for a garden bed in the school yard, in lieu of planting a physical garden, teachers can have students “plant” a paper garden in the classroom or in a school hallway. For this modification (or in addition to the outside, physical garden planted), have students construct a paper model of their plant. This model can be either 3D or 2D. If teachers would like the plants flat along a wall, 2D is recommended. If space allows, 3D models promote a stronger conceptualization of models (e.g., pollination syndromes, as covered in the Research Rangers Pollination Partners nature exploration). Students can build their plant models using construction paper, glue, tape, scissors, coloring utensils (e.g., markers, colored pencils, pens), and optional technology (for looking up pictures of their plant species). Alternatively, students can print out real photos of their plants and cut them out instead of building a plant model (this option reduces time commitments). Teachers may choose to use an optional large piece of butcher paper to create a garden backdrop and invite students to “plant” their species in the hall, affixing their plant to the backdrop using tape. Students can then also attach their informational plant sign next to their plants. This creates a fun paper garden providing a lasting reminder of this unit, a visual learning tool for other students to explore, and a showcase talking point for visitors!
- As another potential alternative, teachers may want to have students spread native plant seeds in a green space (such as a grassy island by pattern pick-up). Students can craft “seed shakers” to disperse seeds across the green space. “Seed shakers” can either collect and reuse old spice containers, or students can create their own using toilet paper/paper towel tubes by attaching a tissue paper or construction paper circle to each side of the cylinder. One circle should include about 4 holes punched in the center of the paper circle and be “permanently affixed with either masking tape or glue. The other circle should be solid and affixed with a rubber band so it can be removed to add seeds to the container for sprinkling. It is also recommended to mark the green space where the seeds are spread with “no mow” signs from March-June to help the area transform into a native wildflower meadow as the seeds germinate over time.
- For a literacy integration option, teachers may elect to include a read-aloud book about growing plants, such as *How Do Seeds Grow into Gardens?* By Clayton Tobias Grider

TEKS:

3.11A - Explore and explain how humans use natural resources, such as in construction, in agriculture, in transportation, and to make products

3.12C - Describe how natural changes to the environment, such as floods and droughts, cause some organisms to thrive and others to perish or move to new locations

4.13A - Explore and explain how structures and functions of plants, such as waxy leaves and deep roots, enable them to survive in their environment

Optional inclusions

2.12A - Describe how the physical characteristics of environments, including the amount of rainfall, support plants and animals within an ecosystem

2.13A - Identify the roots, stems, leaves, flowers, fruits, and seeds of plants and compare how those structures help different plants meet their basic needs for survival

4.12A - Investigate and explain how most producers can make their own food using sunlight, water, and carbon dioxide through the cycling of matter

Integrated NGSS Science Practices:

- Asking Questions & Defining Problems
- Developing & Using Models
- Planning & Carrying Out Investigations
- Analyzing & Interpreting Data
- Using Mathematics & Computational Thinking
- Constructing Explanations
- Engaging in an Argument Stemming from Evidence
- Obtaining, Evaluating, and Communicating Information