

Grade 2: Module 3: Labs

2 – Practice Stage

Labs: Practice Stage

Days 5–10

Labs continue to take place in four stages, and the purposes of each remain the same (see Module 2 Practice Stage).

What stays the same from previous stage(s):

- During the Practice stage, the materials, tasks, and guiding questions remain similar to those of the Launch stage.

What is different from previous stage(s):

- During the Practice stage, students visit two Labs per day.



Practice Stage: At-a-Glance

Guiding Question

Create Lab

How can I create a scientific drawing of a plant?

Engineer Lab

How can I use my knowledge about seeds and pollination to design tools to help in these processes?

Explore Lab

How can I use scientific inquiry to discover the needs of plants?

Imagine Lab

How can I use poetry and movement to learn more about seeds and pollination?

Learning Target(s)

Create Lab

I can create an accurate and detailed drawing of a leaf.

Engineer Lab

I can explore materials and methods for dispersing seeds.
I can design a tool to help in the process of seed dispersal.

Explore Lab

I can conduct an investigation to discover the needs of plants.
I can make observations about plants.

Imagine Lab

I can build knowledge about seeds and pollination through poetry.
I can improve my reading fluency by reading poetry aloud.
I can create movement to match poetry about seeds and pollination.

Create Lab

Create Lab Checklist (SL.2.1, SL.2.3)

Engineer Lab

Engineer Lab Checklist (SL.2.1, SL.2.3)

Explore Lab

Explore Lab Checklist (W.2.7, SL.2.1, SL.2.3)

Imagine Lab

Imagine Lab Checklist (RL.2.4, RF.2.4, SL.2.1, SL.2.3)

Practice Stage: Daily Schedule

Lab Component	Time
Storytime	10 minutes
Setting Lab Goals	5 minutes
In the Lab, Part I	20 minutes
In the Lab, Part II	20 minutes
Reflecting on Learning	5 minutes

Practice Stage: Storytime

10 MINUTES

Teaching Notes**Purpose:**

- Review the Storytime Teaching Notes in the Launch stage document as needed.

In advance:

- Choose a text from your classroom library or the Grade 2: Labs Recommended Storytime and Research Book List (in the Labs Teacher Guide)
- Consider creating a focus question for Storytime (see example in the Experience section below).
- Create four heterogeneous Lab groups.
- Post: Focus question (optional).

Materials

- ☒ Labs song (one to display)
- ☒ Text for Storytime (chosen by teacher; see Teaching Notes)

Experience (identical during all four stages of Labs)

- Follow the routine established in Modules 1–2 to engage students with the **Labs song** and **text for Storytime**.

Practice Stage: Setting Lab Goals

5 MINUTES

Teaching Notes

Purpose:

- Students continue to use this time to reinforce executive functioning skills by focusing their attention, making a plan for their time, exhibiting self-regulation, and following instructions.

Logistics:

- During the Practice stage, Lab groups visit two workstations for 20 minutes each.

In advance:

- Decide on a system of storage and movement of Labs notebooks.
- Post:
 - Guiding question for each Lab, learning target(s) for each Lab, and Labs schedule.
 - Labs schedule for students to review as they transition to their second Lab.

Materials

- ☒ Learning target(s) (one to display for each Lab; see Practice Stage: At-a-Glance for the specific target(s) for each Lab)
- ☒ Labs schedule (one to display)
- ☒ Labs notebook (one per student)
- ☒ Pencils (one per student)

Experience

- Tell students that today they will visit two Labs.
- Review the **learning target(s)** and **Labs schedule** with students.
- Invite students to open their **Labs notebook** and follow the routine established in Modules 1–2 to guide them through setting goals:
 - Review the sentence starters at the top of the page.
 - Invite students to notice what Lab they will visit first and second and to make a goal for each Lab.
 - Direct students to record their goals for the day in their **Labs notebook** using a **pencil**.
- Invite students to put on their imaginary lab coats and goggles to show they are ready for learning and fun!

Practice Stage: In the Labs**40 MINUTES**

- Refer to the In the Labs section below for detailed plans on each specific Lab.

Practice Stage: Reflecting on Learning**5 MINUTES****Teaching Notes****Purpose:**

- Similar to Modules 1–2, the cycle of goal-setting and reflecting is meant to increase student ownership and intentionality. Continue to support students with predictable structures of reflection and familiar sentence frames.

In advance:

- Post: Sentence frames or picture clues for any reflection questions you will use regularly (optional).

Materials

- ✓ Labs song (one to display)
- ✓ Learning target(s) (one to display for each Lab; see Practice Stage: At-a-Glance for the specific target(s) for each Lab)
- ✓ Labs notebook (one per student)

Experience

- Gather students back together whole group by singing the (conclusion of) the **Labs song**.
- Remind students of the **learning target(s)** for their Labs and guide them through their reflection:
 - Invite students to review their goal in their **Labs notebook**.
 - Ask a reflective question and remind students of the sentence starters at the top of the page.
 - Invite students to signal and share with a partner when they are ready.
 - Invite students to record their reflection in their Labs notebook.
- Invite students to give a neighbor a high-five and take off their imaginary Lab coat and goggles to indicate the end of the Lab experience.



Practice Stage: In the Create Lab

Guiding Question

- How can I create a scientific drawing of a plant?

Learning Target

- I can create an accurate and detailed drawing of a leaf.

Teaching Notes

How this stage of this Lab builds on previous stage(s):

- Students continue to create accurate and detailed drawings of leaves.

What is new about this stage of this Lab:

- Students have a greater degree of independence, both in their work in the Lab and in their movement during Lab time.
- Students continue to create a variety of leaf drawings. The choice of the leaf and the ability to make multiple attempts, or revise their attempts, will allow for further practice.

Habits of character:

- During the Practice stage of the Create Lab, students continue to practice their perseverance. Similar to the Launch stage, students may have difficulty in achieving a “perfect” result right away, leading to a sense of frustration or failure. On the other hand, some students will need to be pushed in their craftsmanship and encouraged to attempt multiple drafts or work carefully and slowly to achieve their personal best.

Logistics:

- During the Practice stage, Lab groups spend 20 minutes in the Create Lab. Because students have limited time, they will need a system and space to store their drawing as they continue to work on them in future Labs.
- Consider having a folder for each student’s work in progress and leftover materials.

In advance:

- Make a Creating Scientific Drawings anchor chart that captures the steps of making a scientific drawing from the Launch stage experience (optional).
- Prepare four workstations by placing several leaves (or photographs of leaves) and drawing materials at each workstation (see supporting materials).
- Based on classroom setup and available materials, choose a storage system for students’ drawings

Materials

Continued materials:

- ✓ Leaves or photographs of leaves (two different leaves for teacher modeling; a variety of leaves, or photographs of leaves, per workstation)
- ✓ Magnifying glasses (one per pair)
- ✓ Paper (blank; two or three pieces per student)
- ✓ Pencils (one per student)
- ✓ Colored pencils (variety of colors; a cup to share per workstation)

Additional materials:

- ✓ Creating Scientific Drawings anchor chart (optional; see Teaching Notes)

Experience

- Welcome students to the Create Lab.
- Remind them that in the Create Lab, they are working to create detailed, accurate drawings of leaves.
- Using a total participation technique, invite responses from the group:
 - “What is important to remember as we continue to draw like scientists?” (We need to draw accurately.)***
 - “What are the steps an artist takes when drawing like a scientist?” (Answers will vary, but may include: They observe closely. They determine the shape, details, and colors they will use.)***
- Remind students that they are focusing on a few important aspects of leaves as they draw: the shape of the leaf, the edges of the leaf, the veins of the leaf, and the color(s) of the leaf.
- Tell students that, as they build their skills in creating scientific drawings, it is important to draw slowly and carefully, trying to make their work as detailed and as accurate as they can.
- Tell students that if they finish a drawing, they may ask a partner from their Lab group to compare their drawing with their leaf and offer specific feedback on what they did well, and how they might make it even more detailed or accurate.
- Tell students that if they finish a drawing and receive feedback on that drawing, they should choose a new leaf and start a new scientific drawing.
- Invite students to begin working on their drawings.
- Circulate and support students as they work. Reinforce the habit of perseverance as needed.
- As they work, remind students that they do not need to finish their drawings today. They will return to the Create Lab many times over the coming days and weeks.
- At the conclusion of In the Lab time, signal students to clean up their Lab space.
- Give Lab groups or individual students specific, positive feedback for responsible and respectful cleanup behaviors.
- As Lab groups are ready, transition them back to the whole group area for Reflecting on Learning.



Practice Stage: In the Engineer Lab

Guiding Question

- How can I use my knowledge about seeds and pollination to design tools to help in these processes?

Learning Targets

- I can explore materials and methods for dispersing seeds.
- I can design a tool to help in the process of seed dispersal.

Teaching Notes

How this stage of this Lab builds on previous stage(s):

- Students continue to explore plants, how they change and grow, and what the students, as plant scientists, can do to help the growth of plants.
- This Engineer Lab is designed to connect to Next Generation Science Standard 2LS-2. While creating a tool to mimic the function of seed dispersal, students focus on the following science and engineering practice: Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.

What is new about this stage of this Lab:

- During the Practice stage, students have a greater degree of independence, both in their work in the Lab and in their movement during Lab time.

Habits of character:

- Responsibility continues to be a key to the success of this Lab, because students are working with a partner with a variety of materials that need to be cared for and properly organized. Additionally, these materials are easily used as toys, so students need to show responsibility (and, perhaps, be given gentle reminders) to remain focused on the goals of the Lab.

Logistics:

- During the Practice stage, students have only 20 minutes in the Engineer Lab.

In advance:

- Consider creating partnerships within Lab groups for students to have a more supportive experience in this stage.
- Prepare the Lab space by placing all exploration materials: bowls, timer, birdseed, cotton balls, fabric swatches, Velcro, and feathers.

Materials

Continued materials:

- ☑ Labs notebooks (one per student)
- ☑ Small bowls (two to share)
- ☑ Timer (one per pair)

- ☑ Birdseed (one 1-pound package to share)
- ☑ Cotton balls (one per student)
- ☑ Fabric swatches (approximately 3-by-3-inch squares; four or five different fabrics; one set to share)
- ☑ Velcro (one square per pair)
- ☑ Feathers (one per pair)

Experience

- Welcome students to the Engineer Lab.
- Using a total participation technique, invite responses from the group:
 - “What is the purpose of our Engineer Lab challenge?” (to explore materials for seed dispersal)*
 - “What have you figured out so far in your seed dispersal challenge?” (Responses will vary, but may include: Some materials pick up many more seeds than others.)*
 - “What aspects of a material determines whether or not it is going to be an effective tool for dispersing seeds?” (its surface size, texture, etc.)*
- Tell students that through the rest of this stage, they will continue to test the different materials, recording their findings in their **Labs notebook**.
- Tell students that, once they have tested each of the materials, they will have the important job of working with their partner to actually design a seed dispersal tool.
- Ask students to imagine this scenario: The animals of their local area have stopped helping to disperse seeds. Therefore, plants are not spreading or growing anymore! It is their job to create a tool, using the best materials, that they could use to help solve this problem.
- Tell students they will work with their partner to design and draw a tool that could be used by people to help disperse seeds in their local area.
- Post and review the directions:
 1. Reflect on the challenges they have already completed.
 2. Discuss with their partner the materials they plan to use.
 3. Discuss with their partner other aspects of their tool. (Examples: How will a person hold it? How will it work?)
 4. Draw their design in their own notebook. (Each student does this.)
 5. Label their drawing with their materials used for each part of the tool.
 6. Answer the reflection questions in their Labs notebooks.
- Answer clarifying questions.
- Invite students to begin working.
- Circulate and support students as they work. Reinforce the habit of collaboration and responsibility as students navigate the sharing of materials.
- At the conclusion of In the Lab time, signal students to clean up their Lab space.
- Give Lab groups or individual students specific, positive feedback for responsible and respectful cleanup behaviors.
- As Lab groups are ready, transition them back to the whole group area for Reflecting on Learning.



Practice Stage: In the Explore Lab

Guiding Question

- How can I use scientific inquiry to discover the needs of plants?

Learning Targets

- I can conduct an investigation to discover the needs of plants.
- I can make observations about plants.

Teaching Notes

How this stage of this Lab builds on previous stage(s):

- This Explore Lab is designed to connect to Next Generation Science Standard 2LS-1. While working with the teacher and other students on a plan investigation, students are addressing the NGSS standard that says: Plan and conduct an investigation to determine if plants need sunlight and water to grow.
- In the Explore Lab, the Practice stage continues to serve two purposes:
 - Collect observational data about plants living in various environments and under different, controlled conditions.
 - Use their observations to build understanding around what plants need to survive and grow.

What is new about this stage of this Lab:

- During the Practice stage, students will move independently (as a Lab group) to the four plants involved in this investigation. They will work as a group to record their observations and discuss their conclusions.

Habits of character:

- Respect and initiative continue to be key to the success of this Lab. Students will be independently going through the scientific investigation (namely in making and recording observations) and will, therefore, need to show initiative in being detailed about their work, staying on task, and talking with their Lab group. Additionally, students will be working with a variety of shared materials (plants, rulers, magnifying glasses, etc.) and will need to show respect for the care and storage of those materials.

Logistics:

- In order for plants to be controlled for this investigation, they will likely need to be placed in multiple areas around the classroom: two plants in a place with access to sunlight or a sun lamp (one with water and one without water), and two plants in a dark environment (one with water and one without water). Lab groups will visit each plant to collect data about its growth, number of leaves, color, and standing.

In advance:

- Decide on appropriate placement of plants to meet the requirements of the experiment designed during the Launch stage (an area with light, an area with no light, etc.) (see Logistics).
- Prepare the Explore Lab with tools students will need to collect data about plants (see materials list).

Materials**Continued materials:**

- ✓ Plants (four for class to share)
- ✓ Magnifying glasses (several to share)
- ✓ Rulers (several to share)
- ✓ Labs notebooks (one per student)
- ✓ Colored pencils (variety of colors; a cup to share per workstation)

Experience

- Welcome students to the Explore Lab.
- Remind them of the primary goal of the Imagine Lab: to conduct an investigation that will determine what plants need to survive and to grow.
- Remind students of the process they agreed upon during the Launch stage:
 1. Students observe **four plants** over multiple weeks (one plant with both sunlight and water; one plant with sunlight but with no water; one plant with water but with no sunlight; and one plant with no sunlight and no water).
 2. Students visit each plant on days they visit the Explore Lab to observe the plants using different tools (including **magnifying glasses** and **rulers**).
 3. Students collect data about each plant in their **Labs notebooks** (including using **colored pencils** to make a drawing of each plant).
- Direct students to the next, appropriate page of the Labs notebook for observing and recording their observations about the plants.
- Guide students through completing which day of the investigation they are on (with Day 1 being the day they recorded the baseline information) because multiple days have passed since their last observation.
- Direct students toward the first plant for observation.
- Support students as they move from plant to plant, ensuring they visit all four plants in the 20 minutes available.
- Support students in making accurate measurements and counts, as well as in being detailed in their observations and sketches for color and “standing” of the plants.
- At the conclusion of In the Lab time, signal students to clean up and return their materials to the Lab space.
- As Lab groups are ready, transition them back to the whole group area for Reflecting on Learning.



Practice Stage: In the Imagine Lab

Guiding Question

- How can I use poetry and movement to learn more about plants and pollinators?

Learning Targets

- I can build knowledge about seeds and pollination through poetry.
- I can improve my reading fluency by reading poetry aloud.
- I can create movement to match poetry about seeds and pollination.

Teaching Notes

How this stage builds on previous stages:

- Students continue to:
 - Build their understanding of seed dispersal and pollination through poetry and movement
 - Use movement to show their understanding of seed dispersal and pollination and the poetry about these topics
 - Build reading fluency through the practice of reading poetry, reading aloud, and repeating readings of an increasingly familiar text

What is new about this stage of this Lab:

- During the Practice stage, students go through this process with a greater amount of independence.
- Students may also choose to engage in other forms of imaginative, collaborative play. Given the more structured nature of the other Lab spaces, the Imagine Lab is purposefully left more open to student choice.

Habits of character:

- Students in this Lab and at this stage need to show several habits of character as they are expected to work more independent of the teacher, but more collaboratively with one another. This takes initiative (choosing how to use the Imagine Lab space productively), respect (of materials and peers), and collaboration (in creating a world of play for themselves and for others.)

In advance:

- Prepare the Imagine Lab with the imaginative play materials from Modules 1–2 (e.g., building blocks, white boards, puppets, dress-up materials).
- Decide which poems about seeds and pollination best meet the needs of students in regard to text complexity, language, and content (see supporting materials).

Materials

Continued materials:

- ☑ Poems about seeds and pollination (from the Launch stage; one per workstation)

Additional materials:

- ☑ Imaginative play materials (variety; from Modules 1–2)

Experience

- Welcome students back to the Imagine Lab.
- Remind them that their goals in the Imagine Lab are to:
 - Use poetry and movement to deepen their understanding of seed dispersal and pollination
 - Use poetry and movement to show what they know about seed dispersal and pollination
 - Create a world of play and imagination for themselves and their peers
 - Have fun
- Tell students that they will find the **poems about seeds and pollination** they worked with during the Launch stage in the Imagine Lab, as well as some additional poetry about seeds and pollination.
- Review the steps students took to read a poem and create movements to accompany that poem:
 1. Read the poem all the way through (they can take turns reading or let one volunteer read it out loud).
 2. Discuss and decide what they think the poem is about.
 3. Read the poem, one small section at a time, choosing movements to match that section.
 4. Read the poem all the way through with movements.
- Tell students they can work with multiple poems, or they can rehearse a single poem until they feel they have perfected it (students can read the poem fluently, and all members of the Lab group know their movements).
- Remind students that, in addition to the poetry and movement, they have all the other **imaginative play materials** that they worked with in Modules 1–2.
- Invite students to begin imagining.
- Circulate and support them as they work, focusing on students working together to create a world of imagination and play with one another, and students cooperating to read poetry and create movement.
- At the conclusion of In the Lab time, signal students to clean up their Lab space.
- Give Lab groups or individual students specific, positive feedback for responsible and respectful cleanup behaviors.
- As Lab groups are ready, transition them back to the whole group area for Reflecting on Learning.