

Grade 2: Module 3: Labs

4 – Choice and Challenge Stage

Labs: Choice and Challenge Stage

Days 23–30

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

What stays the same from previous stage(s):

- During the Choice and Challenge stage, the guiding questions remain the same as in previous stages.

What is different from previous stage(s):

- Within a single Lab session during the Choice and Challenge stage, students spend half of the Lab time in the Lab space of their choice and the other half in the Imagine Lab. This is done to meet the needs of our youngest learners, giving them the time and space for play. It also gives teachers more capacity in addressing students' needs in the Engineer and Create Labs.
- During the Choice and Challenge stage, a few specific tasks are also given their own separate days of Lab time: transition to Choice and Challenge stage, giving and receiving feedback, preparing to share, and celebrating. (Refer to the In the Labs section below for more detailed information on which days these tasks occur.)



Choice and Challenge 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?

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 scientific drawing of a plant.
I can label my drawing to show understanding of each part's function.

Engineer Lab

I can create a final design of a pollinator tool.
I can build a prototype of my pollinator tool.

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)

Imagine Lab

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

Choice and Challenge Stage: Daily Schedule

Lab Component	Time
Storytime	10 minutes
Setting Lab Goals	5 minutes
In the Lab: Choice Lab	20 minutes
In the Lab: Imagine Lab	20 minutes
Reflecting on Learning	5 minutes

Choice and Challenge 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 own 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).
- Post: Focus question (optional).

Materials

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

Experience

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

Choice and Challenge Stage: Setting Lab Goals

5 MINUTES

Teaching Notes

Purpose:

- Students' goals during the Choice and Challenge stage should become more specific, because they are working on a single project over the course of multiple days. Help students focus their goals on a specific aspect of their Lab work that they want to finish or improve, or a particular obstacle they hope to overcome.

Habits of character:

- Some students may need additional support with perseverance and collaboration as they prepare their products for feedback and an audience. Consider providing students with supportive Lab partners to problem-solve and give continual feedback.

Logistics:

- During the Choice and Challenge stage, students visit two Labs, their Choice and Challenge Lab and the Imagine Lab, each for 20 minutes.

In advance:

- Present the different product options available to students: the scientific drawing in the Create Lab or the pollinator tool in the Engineer Lab.
- Create a system for students to choose which Lab they will visit for the Choice and Challenge stage. Consider using student choice to create new Lab groups for this stage.
- Post: Guiding question for each Lab, learning target(s) for each Lab, and Labs schedule.

Materials

- Learning target(s) (one to display for each Lab; see Choice and Challenge Stage: At-a-Glance for the specific target(s) for each Lab)
- Labs schedule (one to display)
- Labs notebook (one per student)
- Pencil (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!

Choice and Challenge Stage: In the Labs

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

Choice and Challenge Stage: Reflecting on Learning

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 Choice and Challenge Stage: At-a-Glance for the specific target(s) for each Lab)
- Labs notebook (one per student)
- Pencils (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 using a **pencil**.
- 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.



Choice and Challenge Stage: In the Create Lab

Guiding Question

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

Learning Targets

- I can create an accurate and detailed scientific drawing of a plant.
- I can Label my drawing to show understanding of each part's function.

Teaching Notes

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

- Students continue to use their skills to complete a scientific drawing of a complete plant (with the exception of roots).

What is new about this stage of this Lab:

- Students study a model of a scientific drawing of a plant in order to visualize the product toward which they have been working as well as to build criteria of a high-quality scientific drawing.
- Instead of focusing on individual plant parts, students draw a more complete plant: a flower, a stem, and leaves.
- Students learn how scientific drawings are labeled, and then label their plant to show the plant's parts and the function of those parts.

Habits of character:

- During the Choice and Challenge stage, students complete their final scientific drawing. Many will feel they are “done” early in the process. Encourage students to push their craftsmanship further, using details and all they know about the drawing process. Using peer and teacher feedback, students may add more details, revise specific aspects of their drawing, or complete a new draft.

Logistics:

- During the Choice and Challenge stage, students spend 20 minutes in their Choice and Challenge Lab and 20 minutes in the Imagine Lab.

In advance:

- Prepare the Create Lab by placing plant images, drawing materials, and a copy of the model scientific drawing of a plant in the Lab space.

Materials

Continued materials:

- Magnifying glasses (one per pair)
- Paper (blank; two or three pieces per student)
- Pencils (one per student)
- Colored pencils (variety of colors; one set per student)

Additional materials:

- ☑ Model scientific drawing of a plant (several in the Create Lab; one to display)
- ☑ Scientific Drawing of a Plant Criteria List anchor chart (new; co-created with students during Transitioning to the Choice and Challenge Stage)
- ☑ Plant images (one set in the Create Lab)
- ☑ Rulers (one per student)

Experience**Transitioning to the Choice and Challenge Stage (Day 23):**

- Students who chose to work in the Engineer Lab for the Choice and Challenge stage may transition to the Imagine Lab at this time. This will allow for a smaller group discussion specific to the needs of students who chose the Create Lab.
- Display the **model scientific drawing of a plant**.
- Tell students that this style of drawing is the culmination of the skills they have been developing in the Create Lab.
- Using a total participation technique, invite responses from the group:
 - “What is similar about this drawing and the drawings you have been doing?” (It is detailed; it is accurate; it fills the page.)*
 - “What is different about this drawing and the drawings you have been doing?” (It is of a complete plant, except the roots; it has words attached to the different parts.)*
- Tell students that one important feature of a scientific drawing is Labels. Labels, or words that explain parts of the drawing, help the audience learn more about the subject of the drawing.
- Choose one Label to study more closely. Read it aloud and ask:
 - “What information does the Label in this drawing relay to the audience?” (the name of the plant part; the function of the that part of the plant)*
 - “What do you notice about the lines that connect the Label to the drawing?” (They are straight.)*
 - “Where do the Label lines point?” (to the center of the part they are describing)*
- Tell students that they will now use this model to create a criteria list that names all the important parts of a high-quality scientific drawing. They will refer to this criteria list to make sure their drawing is of the best possible quality.
- Think-Pair-Share:
 - “What are all the things we now know make a high-quality scientific drawing?” (Responses will vary, but may include: It fills the page; it is accurate; it is detailed; it has Labels that teach more about the drawing; the Labels are attached by straight lines; the lines connect to the middle of the part they describe.)*
- As students share out, capture their responses on the **Scientific Drawing of a Plant Criteria List anchor chart**. This anchor chart will be referenced throughout the creation process, but most importantly during the Choice and Challenge Giving and Receiving Feedback Day.
- Tell students that they will choose a **plant image** to create a scientific drawing for their final product.

- These scientific drawings will be displayed so others can learn about scientific drawings, the parts of plants, and various functions of plant parts.
- Tell students that they will use all they know about scientific drawing to begin.
- Remind them that they continue to have access to materials provided in the Launch, Practice, and Extend stages: **magnifying glasses, paper, pencils, and colored pencils**, as well as **rulers**.
- During days 24-26, students continue to work on their scientific drawings, using the model of a scientific drawing Scientific Drawing of a Plant Criteria list as needed to support quality work.

Giving and Receiving Feedback (Day 27):

- Similar to Transitioning to the Choice and Challenge Lab Stage, consider dividing students into their two groups during Giving and Receiving Feedback. One group will work on giving and receiving feedback while the other group works in the Imagine Lab. Then the groups will switch.
- Invite students in the Create Lab to bring their scientific drawings to the whole group meeting area.
- Guide students through giving and receiving feedback about their scientific drawings using the routine established in Module 2:
 - Review the Scientific Drawing of a Plant Criteria List anchor chart.
 - Remind students that their star and step should come from this list.
 - As needed, model giving and receiving feedback with a student volunteer.
- Invite students to give and receive feedback about their scientific drawings with an elbow partner.
- Invite students to verbally name, or write, a concrete next step they will take based on the feedback they received.

Applying Feedback (Day 28):

- Students apply feedback to make revisions to their scientific drawings.

Preparing to Share (Day 29):

- At this point, students should have a final product that they are ready to share with an audience (internal or external).
- Similar to Modules 1–2, students can use this preparation time to Label their final product, present it to a partner, or write and draw a reflection.

Celebrating (Day 30):

- There are multiple ways in which students may celebrate and share their final product. Consider:
 - Setting up a “museum” of student work for students, families, or other classes to visit.
 - Displaying student work in the school library or local library.
- Compiling the drawings into a book that will teach others about plants, plant parts, and the function of plant parts.



Choice and Challenge 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 create a final design of a pollinator tool.
- I can build a prototype of my pollinator tool.

Teaching Notes

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

- Students may use the designs they created during the Extend stage, developing them into a final design, or they may start over with a new idea.
- This Engineer Lab connects to Next Generation Science Standard 2-LS2-2: 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:

- Students bring their design to life by building a prototype of their tool.
- Students test their prototype, making necessary changes in order to make it more effective.

Habits of character

- During the Choice and Challenge stage, students create a final product. Some students may feel they are “done” early in the process. Encourage them to push their craftsmanship further by testing their product, making adjustments, or adding additional details to create their best possible work.

Logistics:

- During the Choice and Challenge stage, students spend 20 minutes in their Choice and Challenge Lab and 20 minutes in the Imagine Lab.
- Due to the nature of the design challenge, it may be challenging to predict the materials students may need in order to build a prototype of their pollination tool. Their tools will most likely involve some of the materials they used in the pollination challenges (cotton balls, pipe cleaners, etc.). However, students will need to design and construct new parts, such as handles, that will require new materials. Cardboard and craft sticks are suggested as two possible materials. Review students’ designs from the Extend stage to determine any additional materials students may need.
- To support a rigorous design process, students are given time to test their prototype and then make adjustments as needed in order to improve it. This testing is done on the Giving and Receiving Feedback day, because the prototype’s performance is considered to be one piece of feedback for which students can make revisions to their product.

Materials

Continued materials:

- Labs notebook (one per student)
- Small paper cups (two per student)
- Flour (yellow-colored; one cup to share)
- Pipe cleaners (several to share)
- Paintbrush (several to share)
- Pencil (one per student)
- Cotton balls (several to share)
- Q-tips (several per student)
- Masking tape (one roll to share)

Additional Materials

- Pollination Tool Prototype Criteria List anchor chart (new; co-created with students during Transitioning to the Choice and Challenge Stage)
- Cardboard (various sizes; several to share)
- Craft sticks (several to share)
- Scissors (several to share)
- Glue sticks (several to share)

Experience

Transitioning to the Choice and Challenge Stage (Day 23):

- Students who chose to work in the Create Lab for the Choice and Challenge stage may transition to the Imagine Lab at this time. This will allow for a smaller group discussion specific to the needs of students who chose the Engineer Lab.
- Give students specific, positive feedback about the wonderful work they have done in the Engineer Lab to prepare for the pollination tool design challenge.
- Tell students that all of the hard work they have done, the testing of different materials and the designs they have completed in their **Labs notebooks**, will be put to use in an exciting final product.
- Tell students that they will now use their designs and a variety of materials to build a prototype of their best pollination tool design.
- Define the word *prototype* as the first model of something, such as a machine, that future copies can be made from.
- Tell students that before they create their prototype, they need to create a criteria list that will ensure they are creating their highest-quality work.
- Think-Pair-Share:

“What does the prototype, or model, of our pollination tool need to include to be of high quality?” (Responses will vary, but may include: The prototype needs to function as a pollination tool. The prototype needs to be stable—all pieces must stay together. The prototype needs to be able to be revised and improved upon, based on its performance.)

- As students share out, clarify and capture their responses on the **Pollination Tool Prototype Criteria List anchor chart**. This anchor chart will be referenced throughout the creation process, but most importantly during the Choice and Challenge Giving and Receiving Feedback Day.
- Tell students that they will have all the materials that were available during the Extend stage (for the pollination challenge), as well as some additional materials that may be useful in creating their prototype.
- Show students the **cardboard, craft sticks, scissors, and glue sticks**.
- Invite students to open their Labs notebooks to their designs of a pollination tool that they created during the Extend stage.
- Think-Pair-Share:

“Based on your designs, what materials will you need to build a prototype of your pollination tool?” (Responses will vary.)

“What steps will you take to build your prototype?” (Responses will vary, but may include: I need to look at my design. I need to gather the materials I will need. I need to see how the pieces will fit together before gluing or taping.)

Tell students that their first steps when they enter the Engineer Lab will include:

1. Review their design in their Labs notebook.
 2. Gather the materials they need based on their design.
 3. Begin assembling their prototype.
 4. Review the Pollination Tool Prototype Criteria List anchor chart as they work.
- Tell students that they will now begin building their own pollination tool prototype.
 - Remind students that they have multiple days to build their prototypes, so they should focus on quality over speed in this process. Also remind them of the **continued materials** from the Extend stage that are available to them.
 - During days 24-26, students continue to work on their pollinator tools, using the model of a scientific drawing Pollination Tool Prototype Criteria list as needed to support quality work.

Giving and Receiving Feedback (Day 27):

- Similar to Transitioning to the Choice and Challenge Lab Stage, consider dividing students into their two groups during Giving and Receiving Feedback. One group will work on giving and receiving feedback while the other group works in the Imagine Lab. Then the groups will switch.
- Invite students in the Engineer Lab to bring their pollination tool prototype to the whole group meeting area.
- Guide students through giving and receiving feedback about their prototypes using the routine established in Module 2.
 - Review the Pollination Tool Prototype Criteria List anchor chart.
 - Remind students that their star and step should come from this list.
 - As needed, model giving and receiving feedback with a student volunteer.
- Invite students to give and receive feedback about their prototype with an elbow partner.
- Tell students that another important piece of feedback when working with prototypes is the process of testing their prototypes.
- Tell students that this testing follows the exact same steps as the pollination challenges during the Extend stage.
- Review with students the process for testing pollination materials.

- Set students up with a Lab partner and materials for testing their prototype.
- As students work, circulate and support them. Specifically, push students in their thinking about the revisions they might make in order to make their pollination tool more effective.

Applying Feedback (Day 28):

- Students apply feedback to make revisions to their pollinator tools.

Preparing to Share (Day 29):

- At this point, students should have a final product that they are ready to share with an audience (internal or external).
- Similar to Modules 1–2, students can use this preparation time to Label their final product, present it to a partner, or write and draw a reflection.

Celebrating (Day 30):

- There are multiple ways in which students may celebrate and share their final product. Consider:
 - Setting up a “museum” of student work for students, families, or other classes to visit
 - Displaying the Life Cycle of a Plant Storyboards near the class garden to students and observe and note the different life stages as the garden grows
 - Displaying student work in the school library or local library



Choice and Challenge Stage: In the Imagine Lab

Guiding Question

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

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 of this Lab builds on previous stage(s):

- 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
- During the Choice and Challenge stage, the Imagine Lab challenges students to create a series of movements for a poem about seed dispersal or animal pollination that they could perform for an audience.

- The Imagine Lab serves as a space of greater freedom and flexibility, which is especially important given the constraints and demands of the Create and Engineer Labs during the Choice and Challenge stage.

Logistics:

- During the Choice and Challenge stage, students spend 20 minutes in their Choice and Challenge Lab and 20 minutes in the Imagine Lab.

In advance:

- Consider audiences for which students might perform their poetry and movement.
- Prepare the Imagine Lab space with a variety of imaginative play materials and the poems with which students have been working in the previous stages.

Materials

Continued materials:

- ☑ Imaginative play materials (variety; from Modules 1–2)
- ☑ Poems about seed dispersal and pollination (from Launch stage; several to share)

Experience

- Remind students that the Imagine Lab is a place for them to:
 - Demonstrate habits of character, especially respect for materials and peers
 - Use their powers of imagination and **imaginative play materials** to engage in fun, creative play with one another
 - Use movement to act out the poems about seed dispersal and pollination
- Give students specific, positive feedback on the work they have been doing so far in the Imagine Lab.
- Tell students that, now that they have practiced reading multiple poems fluently, and have explored multiple ways to represent different poems through movement, they may want to create a piece to perform for an audience.
- Using a total participation technique, invite responses from the group:

“What would be different about performing a piece a poem and movement for a poem in front of an audience?” (Responses will vary, but may include: The piece would need to be practiced many times. The movements would need to match the poem so the audience can understand the connection.)
- Tell students that they should choose a poem based on their own interest, a poem they enjoy hearing and enjoy moving to.
- Review the poetry students have been working with during this module.
- Using a total participation technique, invite responses from the group:

“Which poem have you enjoyed hearing the most? Which poem do you most like moving to?” (Responses will vary.)
- Help students to arrange themselves into poetry groups based on the poem they most want to perform.
- Tell students they will have 20 minutes in the Imagine Lab. Invite them to begin moving, reading, and imagining.