Lesson 4.2
Planning the Seed Investigations
Lesson Overview

In this lesson, students continue investigating the question, *How do seeds that animals don’t use for food get dispersed?* First, students consider the function of the spiked structures around burclover seeds. They then observe images of two additional plants and their seeds in the Bengal Tiger Reserve to predict how those seeds are dispersed. Students are then introduced to the Seed Investigations, during which they will test features of the sal and red silk plants. Students revisit *Investigating Seeds* to explain how the friends in the book decided what to measure in their investigation. The teacher models how to plan what to measure in the Propeller Seed Investigation, and then student groups determine how to measure in the Fluffy Seed Investigation. Students’ plans for the Fluffy Seed Investigation will be assessed as part of the rubrics included in Lesson 4.3. The purpose of this lesson is for students to consider how structures around seeds might support seed dispersal and for students to more independently practice making a plan for measuring in an investigation.

**Anchor phenomenon:** Seeds from sal trees, fig trees, and red silk trees in the Bengal Tiger Reserve can get to places where they can grow.

**Students learn:**

- Scientists make models to explore phenomena that they cannot observe directly.
- Scientists determine how to measure in an investigation based on what they are interested in learning about.
- Structures around seeds help those seeds get dispersed in certain ways.
Measurement in Investigating Seeds

Students revisit *Investigating Seeds* to discuss how the friends in the book conduct their Burclover Seed Investigation.

### Instructional Guide

1. **Refer to the posted key concept.**

   We know what models we can use in our investigation, but what data should we collect? Remember, before they investigate, scientists decide how they will measure the thing they want to learn about. As plant scientists, we need to decide how we will measure in our investigation before we do the investigation.

2. **Set a purpose for reading.**

   Before we decide how to measure in our investigation, let’s look back at the book *Investigating Seeds.*

   We know that we will need to decide how to measure in our investigation. So, what should be our purpose for reading this time?

   Have students turn and talk to a partner about the purpose for reading. Ask volunteers to share out. As a class, agree on something similar to, *Figure out how the friends in the book decide how to measure in their investigation.* Record the purpose on the Setting a Purpose chart.

3. **Have students read.** Have students reread pages 14–20 of *Investigating Seeds* to discover how the students in the book decided how to measure in their investigation.

4. **Pairs discuss and share out.** Ask pairs to discuss what they learned about how the students in the book measured and how they decided what to measure. Then call on pairs to share their ideas with the whole class.
How did the friends measure?
[The friends used a tape measure to measure how far the burclover seed went when it was dragged across the floor on the model fur. They also used a tape measure to measure how far the burclover seed went when it was blown across the rug by a fan.]

How did they decide what to measure?
[They wanted to know how far burclover seeds could go, so they decided to measure the distance.]

5. Have students turn to page 20. Point out that the friends measured five different times for each dispersal method.

Why do you think the friends measured more than one time?

Have students turn and talk to a partner about their ideas. Then, ask students to share out. Accept all responses.

6. Draw attention to the data. Direct students to look at the distances the friends measured each column. Point out that the distances were never the same.

Results in an investigation are not always the same, so it’s helpful to do multiple tests.

Teacher Support

Rationale

Pedagogical Goals: Measurement in Investigating Seeds
When scientists measure, they decide what to measure in order to answer the question they are investigating and which tool they will use to measure it, and they measure more than once because the result is not always the same and scientists need to be able to compare. Before students are given an opportunity to more independently plan how to measure in their investigation, they first reread a section of Investigating Seeds to analyze more closely how the friends in the text determine how to measure and how they carry out their measurement in their investigation. The purpose of rereading this section of the text is to provide students with an explicit model of how they can plan for measurement before they begin their investigations.

Instructional Suggestion

Time Management: Time for Reading
You may find that some students are not able to reread all of pages 14–20 in the time suggested here. You can either extend the lesson and provide additional time, or you can proceed once students have read at least pages 14 and 15. By reading just these pages, students will be able to succeed at their purpose for reading: figuring out how the friends decided what to measure. Pages 16–20 are useful to emphasize the need for multiple measurements, but this point and key parts from the text will be reviewed as a class so it is alright if not all students make it through rereading these pages.
Measurement in Investigating Seeds

Students revisit *Investigating Seeds* to discuss how the friends in the book conduct their Burclover Seed Investigation.

**Instructional Guide**

1. **Refer to the posted key concept.**

   Sabemos qué modelos podemos usar en nuestra investigación, pero ¿qué datos debemos recolectar? Recuerden, antes de investigar, los científicos deciden cómo medirán aquello sobre lo cual quieren aprender. Como científicos y científicas de plantas, necesitamos decidir cómo mediremos en nuestra investigación antes de hacer la investigación.

2. **Set a purpose for reading.**

   Antes de decidir cómo medir en la investigación, regresemos al libro *Investigar semillas*.

   Sabemos que necesitaremos decidir cómo medir en nuestra investigación. Entonces, ¿cuál debe ser nuestro propósito para leer esta vez?

   Have students turn and talk to a partner about the purpose for reading. Ask volunteers to share out. As a class, agree on something similar to, *Figure out how the friends in the book decide how to measure in their investigation*. Record the purpose on the Setting a Purpose chart.

3. **Have students read.** Have students reread pages 14–20 of *Investigating Seeds* to discover how the students in the book decided how to measure in their investigation.

4. **Pairs discuss and share out.** Ask pairs to discuss what they learned about how the students in the book measured and how they decided what to measure. Then call on pairs to share their ideas with the whole class.
¿Cómo midieron los amigos?
[Los amigos usaron una cinta de medir para medir qué tan lejos llegó la semilla de trébol carretilla cuando fue arrastrada por el piso en el pelaje de modelo. También usaron una cinta de medir para medir qué tan lejos llegó la semilla de trébol carretilla cuando el aire de un ventilador la empujó por la alfombra].

¿Cómo decidieron qué medir?
[Querían saber qué tan lejos podían llegar las semillas de trébol carretilla, así que decidieron medir la distancia].

5. **Have students turn to page 20.** Point out that the friends measured five different times for each dispersal method.

¿Por qué piensan que los amigos midieron más de una vez?

Have students turn and talk to a partner about their ideas. Then, ask students to share out. Accept all responses.

6. **Draw attention to the data.** Direct students to look at the distances the friends measured each column. Point out that the distances were never the same.

Las resultados en una investigación no siempre son iguales, así que es útil hacer múltiples pruebas.

**Teacher Support**

**Rationale**

**Pedagogical Goals: Measurement in Investigating Seeds**
When scientists measure, they decide what to measure in order to answer the question they are investigating and which tool they will use to measure it, and they measure more than once because the result is not always the same and scientists need to be able to compare. Before students are given an opportunity to more independently plan how to measure in their investigation, they first reread a section of *Investigating Seeds* to analyze more closely how the friends in the text determine how to measure and how they carry out their measurement in their investigation. The purpose of rereading this section of the text is to provide students with an explicit model of how they can plan for measurement before they begin their investigations.

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