Lesson Overview

Students read to gather more information about additional methods of seed dispersal and about how models can be used to investigate the process of seed dispersal. The class revisits the broadleaf forest habitat of the Bengal Tiger Reserve to consider different ways the seeds from trees living in this habitat might be dispersed. Students are introduced to the book *Investigating Seeds*, about a group of friends who investigate how seeds get to new places. The class reads the first part of the book together in order to find out how seeds that aren’t eaten by animals get dispersed. Then, partners set their own purpose for reading the remainder of the book. After reading, students record the ways in which the friends in the book used a model to investigate seed dispersal. The purpose of this lesson is for students to learn that seeds can be dispersed in a variety of ways and to expand their understanding of how models can be used to investigate the process of seed dispersal.

**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:**

- Seeds can be dispersed when they stick to animal fur and get carried to another place.
- Seeds can be dispersed when they blow in the wind.
- Scientists can use models to investigate how seeds are dispersed.
Whole-Class Reading

Students are introduced to *Investigating Seeds* and set a purpose for reading.

### Instructional Guide

1. **Introduce the new Investigation Question.**

   To investigate how other seeds in the Bengal Tiger Reserve get dispersed, we need to think about how seeds that aren’t eaten by animals get to a good place to grow into new plants.

   Point to the Investigation Question and read it aloud.

   *How do seeds that animals don’t use for food get dispersed?*

2. **Hold up *Investigating Seeds*.** Read the title aloud. Invite students to share their observations of the front cover.

3. **Set a purpose for reading.**

   This book is about a group of friends who investigate how seeds get to new places.

4. **Distribute books.** Distribute one copy of *Investigating Seeds* to each pair of students. Revisit the Partner Reading Guidelines as needed.

5. **Read aloud from *Investigating Seeds*.** Start on page 3, and pause at the end of that page.
How do you think the plant got to the crack?
[It grew from a seed. The seed was moved there from another place.]

How do you think the seed was moved there?

Accept all answers. Continue reading through page 9.

6. Return to the purpose for reading. Refer students to the Setting a Purpose chart.

We were reading to find out how seeds that aren’t eaten by animals are dispersed. Have we met our purpose for reading?
[Yes.]

7. Add to the How Seeds Can Get Dispersed chart. Solicit ideas from students about what to add to the class chart.
[Seeds blow in the wind. Seeds get carried by animals in their fur.] Complete the chart as a class.

Teacher Support

Background

About the Book: Investigating Seeds
Investigating Seeds follows a group of friends as they investigate how a small burclover plant came to grow in a sidewalk crack. The friends build on their understanding that new plants sprout from seeds, and they launch an investigation of how the burclover seed that made this plant could have been moved to a place away from other plants. They use a pair of models to measure two different forms of seed dispersal: blowing in the wind and getting carried by animal fur. By carefully recording and comparing data from a series of trials, the friends find evidence that burclover seeds get dispersed when they are caught in animal fur and carried to a new place. Investigating Seeds models the investigation practice that students use throughout the unit while simultaneously building their understanding of how models can be used to support the investigation process.

Science Note: Burclover Fruit and Seeds
In Investigating Seeds, students read about a group of friends who investigate burclover seeds to discover how these seeds are dispersed. The friends in the text refer to the spiked, spherical structures of the burclover plant as seeds, but these structures are actually the fruit and the seeds of the burclover plant. In botany, a fruit is any seed-bearing structure, including juicy fruits, as well as winged, spiked, fluffy, or pod-like structures around seeds. Therefore, the spiked structures surrounding the burclover seeds that the friends in Investigating Seeds test are the fruits of those plants. Each fruit structure contains a few small burclover seeds inside it. It is not critical that students understand this distinction in this unit (and it is not emphasized for students for the purpose of simplifying the content of the unit). However, you might consider pointing out this distinction if students ask about these structures while emphasizing that this is not a kind of fruit that is eaten by animals.
Partner Reading

Students set a second purpose for reading the rest of the book, and pairs read.

Instructional Guide


2. Discuss models.

   The friends are going to use a model to help investigate their question about how seeds are dispersed.

   Point to the model vocabulary card on the wall.

   Remember that a model is something scientists make to answer questions about the real world. How have we
   used models in our investigations of living things and their habitats?
   [We used our bodies to model how plants grow from seeds. We used a flashlight and a model tree to show how
   the leaves of taller plants can block sunlight from getting to the leaves of smaller plants underneath them. We
   used modeling clay and beans to model how different birds eat different seeds and leave droppings with seeds
   inside in new places.]

3. Look ahead to students’ upcoming investigations. Let students know that in the next couple of lessons, they will be
   doing their own investigations of how seeds move.

4. Prepare to set second purpose for reading.

   In the next few lessons, you will plan and do an investigation that uses a model to figure out different ways that
   seeds can be dispersed.

   What should be your purpose for reading the rest of Investigating Seeds? Choose a purpose that will help you
   with your own investigations.

5. Pairs discuss a purpose for reading. Have pairs discuss possible purposes for reading the remainder of the book.
6. **Project notebook page 60.** Have students turn to page 60, Investigating Seeds, in the Investigation Notebook. Read Step 1 of the directions aloud.

   - **Step 1:** Set a purpose for reading *Investigating Seeds*.

7. **On-the-Fly Assessment:** **Students record their purpose for reading.** Circulate and observe the purposes that students set for reading. Are they using what they know about the book and what they know about their upcoming investigations to set a purpose for reading?

8. **Project notebook page 60 again and read aloud the remaining directions.**

   - **Step 2:** Read the book.
   - **Step 3:** In the box below, draw a picture to show how the friends used a model to investigate how seeds get dispersed.
   - **Step 4:** Label your drawing.

   Clarify that students will draw their pictures *after* they read the book. Explain that students can return to any pages in the book that will be helpful as they make their drawing.

9. **Students read with partners and complete the notebook page.** Circulate to support students’ partner reading and observe what they discuss and record about how to use a model to investigate seed dispersal.

10. **Pairs briefly return to their purpose for reading.** Give pairs a minute to refer back to the purpose they set for reading and have them reflect on whether or not they met their purpose.

11. **Invite partners to share their drawings.** Encourage students to refer to page 60 in their notebooks when sharing about how the friends in the book used a model to investigate seeds.

12. **Discuss investigate.**

   - **Put the word in context.** Ask students to turn to page 7. Read the page aloud.
   - **Prompt students to think about the meaning of the word.** Ask questions to help students think more deeply about the word, such as the following:
     - Why do the friends in the book want to investigate the plant?
     - Can you investigate by reading?
     - Can you investigate by using a model?
   - **Find the word in the text.** Have students turn to page 12 and, with their partners, find and read the sentence that includes the word *investigate*.
   - **Discuss other examples.** Have students describe different ways they have investigated plants in this unit so far.
• **Give the science meaning of the word.** Explain that *investigate* means to try to learn more about something.

13. **Conclude the lesson.** Collect copies of *Investigating Seeds*. Let students know that in the next lessons, they will use their own models to investigate different ways that seeds are dispersed, just like the group of friends in the book did.

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**Embedded Formative Assessment**

**On-the-Fly Assessment 12: Setting a Purpose for Reading**

**Look for:** Prior to this lesson, students have had multiple opportunities for teacher guidance in setting a purpose for reading, but this is the first time that students set their own purpose for reading. Look for whether or not students are able to consider what they know about the book, as well as what they know about their upcoming investigations in order to set a purpose. Is the purpose they set related to investigating seeds? Is it related to using models? Will meeting the purpose help students with their own investigations?

**Now what?** If students are having difficulty setting a purpose for reading, remind them that they will be using a model to investigate seeds, and explain that they can use this book to help them prepare for their own investigations. Ask them to think about how they would use a model to investigate how seeds move. What would they like to know more about before they do their own investigations? Help students turn their questions into a purpose for reading. For example, if students want to know what could be used as a model for a seed, their purpose for reading can be, *Find out what materials can be used as models for seeds.* Depending on the needs of your class, you may want to work with the whole class, small groups, or individual students.

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**Teacher Support**

**Background**

**Literacy Note: Setting a Purpose for Reading**

In this lesson, two purposes for reading are set. In Activity 3, you support students in setting a purpose for reading that helps students learn about different ways seeds are dispersed; then, once this purpose is met, students are asked (in Activity 4) to set their own purpose for reading the remainder of the book. Prior to this lesson, students have had multiple opportunities for teacher guidance in setting a purpose for reading, but this is the first time that students set their own purpose for reading. Before students set a purpose for reading, you provide them with some background on what they will be doing in the next few lessons. This supports students in choosing a purpose that will help them with their own upcoming investigations.

**Background**

**Science Practices: About Models**

A model is a representation of a phenomenon in the natural world that scientists make to help them figure out how or why the phenomenon happens. These representations often include things that are not directly observable. A model may be a diagram, a physical setup, a mathematical equation, or a computer program. Models are a regular part of
students’ investigation and learning in the Amplify Science curriculum. In this chapter, students will plan and complete an investigation where they use model seeds to investigate how seed structures can enable a seed to be dispersed by wind. In this lesson, students read about one way that a model can be used to investigate seed dispersal.

Possible Responses

Investigation Notebook
Reading Investigating Seeds (page 60)

Answers will vary. Students’ purpose for reading should relate to investigating with a model. Possible responses include the following:

- find out how to use a model to investigate different ways that seeds can be dispersed
- find out how what you measure when you use a model to investigate ways that seeds move
- find out how different things you can use as models for seeds when you investigate seeds
Reading *Investigating Seeds*

Directions:
1. Set a purpose for reading *Investigating Seeds*.
2. Read the book.
3. In the box below, draw a picture to show how the friends used a model to investigate how seeds get dispersed.
4. Label your drawing.

My purpose for reading is to __________________________________________
___________________________________________________________________
___________________________________________________________________
Whole-Class Reading

Students are introduced to *Investigating Seeds* and set a purpose for reading.

**Instructional Guide**

1. **Introduce the new Investigation Question.**

   Para investigar cómo se dispersan otras semillas en la Reserva Tigre de Bengala, necesitamos pensar en cómo las semillas que no comen los animales llegan a un buen lugar para crecer y convertirse en plantas nuevas.

   Point to the Investigation Question and read it aloud.

   ¿Cómo se dispersan las semillas que los animales no usan como alimento?

2. **Hold up *Investigating Seeds***. Read the title aloud. Invite students to share their observations of the front cover.

   Este libro trata acerca de un grupo de amigos que investigan cómo llegan las semillas a lugares nuevos.

3. **Set a purpose for reading.**

   ¿Cuál debe ser nuestro propósito para leer?

   Have students discuss with their partners what the purpose for reading should be. If necessary, refer students to the Investigation Question and encourage them to use that as a guide to help set a purpose for reading. Then, have volunteers share out. As a class, agree on something similar to, *Find out how to use a model to investigate different ways that seeds can be dispersed.* Write the purpose on the Setting a Purpose chart.

4. **Distribute books.** Distribute one copy of *Investigating Seeds* to each pair of students. Revisit the Partner Reading Guidelines as needed.

5. **Read aloud from *Investigating Seeds***. Start on page 3, and pause at the end of that page.
¿Cómo piensan que la planta llegó a la grieta? [Creció de una semilla. La semilla fue movida allí desde otro lugar].

¿Cómo piensan que fue movida allí la semilla?

Accept all answers. Continue reading through page 9.

6. Return to the purpose for reading. Refer students to the Setting a Purpose chart.

Estábamos leyendo para averiguar cómo se dispersan las semillas que los animales no comen. ¿Hemos cumplido nuestro propósito para leer? [Sí].

7. Add to the How Seeds Can Get Dispersed chart. Solicit ideas from students about what to add to the class chart. [Seeds blow in the wind. Seeds get carried by animals in their fur.] Complete the chart as a class.

Teacher Support

Background

About the Book: Investigating Seeds

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Science Note: Burclover Fruit and Seeds

In Investigating Seeds, students read about a group of friends who investigate burclover seeds to discover how these seeds are dispersed. The friends in the text refer to the spiked, spherical structures of the burclover plant as seeds, but these structures are actually the fruit and the seeds of the burclover plant. In botany, a fruit is any seed-bearing structure, including juicy fruits, as well as winged, spiked, fluffy, or pod-like structures around seeds. Therefore, the spiked structures surrounding the burclover seeds that the friends in Investigating Seeds test are the fruits of those plants. Each fruit structure contains a few small burclover seeds inside it. It is not critical that students understand this distinction in this unit (and it is not emphasized for students for the purpose of simplifying the content of the unit). However, you might consider pointing out this distinction if students ask about these structures while emphasizing that this is not a kind of fruit that is eaten by animals.
Partner Reading

Students set a second purpose for reading the rest of the book, and pairs read.

**Instructional Guide**

1. **Read aloud pages 10–13.** Have pairs follow along in their own copies of the book.

2. **Discuss models.**

   > Los amigos van a usar un modelo para ayudar a investigar su pregunta acerca de cómo se dispersan las semillas.

   Point to the *model* vocabulary card on the wall.

   > Recuerden que un modelo es algo que hacen los científicos para responder preguntas acerca del mundo real. ¿Cómo hemos usado modelos en nuestras investigaciones de seres vivientes y sus hábitats?

   [Usamos nuestros cuerpos para modelar cómo las plantas crecen de las semillas. Usamos una linterna y un árbol de modelo para mostrar cómo las hojas de las plantas más altas pueden impedir que la luz del sol llegue a las hojas de las plantas más pequeñas debajo de ellas. Usamos plastilina y frijoles para modelar cómo diferentes pájaros comen diferentes semillas y dejan heces con semillas dentro en lugares nuevos].

3. **Look ahead to students’ upcoming investigations.** Let students know that in the next couple of lessons, they will be doing their own investigations of how seeds move.

4. **Prepare to set second purpose for reading.**

   > En las siguientes lecciones, planearán y harán una investigación que usa un modelo para averiguar diferentes maneras en que pueden dispersarse las semillas.

   > ¿Cuál debería ser su propósito para leer el resto de *Investigar semillas*? Elijan un propósito que les ayude con sus propias investigaciones.

5. **Pairs discuss a purpose for reading.** Have pairs discuss possible purposes for reading the remainder of the book.
6. Project notebook page 60. Have students turn to page 60, Investigating Seeds, in the Investigation Notebook. Read Step 1 of the directions aloud.

   Paso 1: Establece un propósito para leer Investigar semillas.

7. On-the-Fly Assessment: Students record their purpose for reading. Circulate and observe the purposes that students set for reading. Are they using what they know about the book and what they know about their upcoming investigations to set a purpose for reading?

8. Project notebook page 60 again and read aloud the remaining directions.

   Paso 2: Lee el libro.
   Paso 3: Haz un dibujo para mostrar cómo los amigos usaron un modelo para investigar cómo se dispersan las semillas.
   Paso 4: Identifica y nombra las partes de tu dibujo.

Clarify that students will draw their pictures after they read the book. Explain that students can return to any pages in the book that will be helpful as they make their drawing.

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• find out how different things you can use as models for seeds when you investigate seeds
Nombre: ____________________________________  Fecha: ________________

Leer Investigar semillas

Instrucciones:
1. Establece un propósito para leer Investigar semillas.
2. Lee el libro.
3. En el cuadro debajo, haz un dibujo para mostrar cómo los amigos usaron un modelo para investigar cómo se dispersan las semillas.
4. Identifica y nombra las partes de tu dibujo.

Mi propósito para leer es ____________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________