Lesson 5.3
Discussing the Flooding Models
Lesson Overview

Students review data from the Flooding Models and write to the principals of Carver and Woodland Elementary schools, then read about how models are used to investigate the past or the future. In pairs, students review and discuss the data from each of the four Flooding Models to determine whether each difference might have caused flooding. The teacher compiles the data on a class poster, and students use it to determine that the difference in surface material caused the flooding. They participate in Shared Writing addressed to the school principals, explaining why one playground flooded and the other did not. They also read a section of the Handbook of Models about scientists who used models for purposes similar to those of the Flooding Models, to investigate the past or future. The purpose of this lesson is to use the model data to determine and explain why one school floods while the other does not.

Anchor Phenomenon: Both the Carver and Woodland playgrounds experienced severe rain, but only Woodland’s playground flooded.
Investigative Phenomenon: Some models flooded more than others.

Students learn:

- The type of material a surface is made of affects whether water soaks into it or collects on top of it.
- Scientists use models to investigate the past and the future.
Returning to the Handbook of Models

Students read about scientists who have used models to study past or future events.

Instructional Guide

1. Display the front cover of the *Handbook of Models* big book. Read the title aloud, then review the purpose of a reference book.

   - Does anyone remember what kind of book this is? [A reference book.]
   - How do we read a reference book differently than other books? [We read just parts of it to learn about something we want to find out more about.]

   Invite students to share what they learned about models, or any models they found interesting, during the previous reads of the reference book.

2. Describe the focus of the models you will read about. Turn to the contents on page 3.

   - What are some reasons that we and other scientists use models instead of studying the real thing? [The real thing is really big or small, or happens really slow or fast.]

   Point out the seventh heading on the page.

   - *Models help scientists investigate the past and the future.*
   - We have been using models to investigate which difference between the two playgrounds caused only Woodland to flood after severe rain.

   - Sometimes, scientists want to learn about something that has already happened, or has not happened yet.
How do our Flooding Models help us learn about something that happened in the past or may happen in the future?

Have students turn to a partner to share their ideas, then call on a few to share with the class.

3. Have students reflect on how models have been useful to investigate.

The playgrounds have had severe rain in the past. They will probably have it again in the future. But we want to learn about why they flood now, when it is not raining. This can help us prepare for future floods.

By using our models, we can learn about flooding during severe rain, even when it is not happening!

4. Read and discuss page 28.

The contents show that I can find out more about how scientists use models to investigate the past and future on page 28.

Turn to pages 28 and 29 and read aloud to students. Invite students to share their observations of the photos on these pages. Help students see that the pairs of pictures depict a model and what it represents.

5. Read aloud pages 30 and 31 then discuss the T. rex model. Read both pages aloud, then discuss the questions below.

Why did the scientists need a model?
[There are no T. rexes alive anymore to test.]

Point out that the scientists built a model of an animal that lived in the past in order to answer a question they have now about the T. rex.

What did the scientists learn from their model?
[The T. rexes had the strongest bite of anything ever.]

How was the model like a real T. rex?
[It was the same shape as a T. rex's skull and had muscles like a real T. rex would have.]

How was the model different from a real T. rex?
[It was on a computer; it could only bite; it did not have any other body parts.]

6. Prompt students to talk in pairs about models in science.

In Handbook of Models, we have read about many different models that scientists have used to find out about things in the real world.
Page through the book with students to remind them of some of the models the class has read about. Then, ask students to reflect on models. Have students discuss their ideas about each question in pairs, then call on a few to share ideas with the class.

1. Imagine you are talking to someone who does not know what a scientific model is. How would you describe it to them?
   
   [A model is like a real thing in some ways, and it helps scientists to study things they wonder about or questions they have.]

2. Why do scientists make models instead of studying the real thing?
   
   [They can help scientists to learn about things that are big or small, things that happen too slowly or quickly to observe, or things that are in the past or future.]

3. Why is it important that a model be like the real thing that a scientist wants to learn about?
   
   [So that what they learn from it is true for the real world.]

7. Conclude the lesson.

   Models have been important to us as weather scientists because we can learn about flooding during severe rain, even when it is not happening!

   We will continue to think about severe weather and how people prepare for it in the next lesson.

   We will also talk about how Woodland could change its playground to prepare for severe rain.

Teacher Support

Instructional Suggestion

Providing More Experience: Features of Reference Books

You have modeled using the features of a reference book to select sections for reading. If you would like to spend more time developing students’ knowledge and use of reference books, gather a variety of reference books and ask students to work in small groups to look through them. Students can make observations about how the books are organized, what kind of information they contain, and what text features are present. Invite students to share their observations as you record them on a class chart. As students share, you may want to organize their observations by how the books are the same and different. Point out text features that the books have in common, modeling how some of the text features in a reference book help a reader know what the book is about and some help locate information. Invite students to connect the concept of setting purposes for reading to selecting a book based on its topic. More experience with a variety of reference books can help students be more strategic in selecting books that match the purposes they have for reading them.
Returning to the Handbook of Models

Students read about scientists who have used models to study past or future events.

Instructional Guide

1. Display the front cover of the *Handbook of Models* big book. Read the title aloud, then review the purpose of a reference book.

¿Alguien recuerda qué tipo de libro es este?
[Un libro de referencia]

¿De qué manera leemos un libro de referencia de manera diferente que otros libros?
[Solo leemos partes de él para aprender acerca de algo sobre lo que queremos averiguar más].

Invite students to share what they learned about models, or any models they found interesting, during the previous reads of the reference book.

2. Describe the focus of the models you will read about. Turn to the contents on page 3.

¿Cuáles son algunas razones por las que nosotros y otros científicos usamos modelos en lugar de estudiar la cosa real?
[La cosa real es realmente grande o pequeña, o sucede realmente lento o rápido].

Point out the seventh heading on the page.

Los modelos ayudan a los científicos a investigar el pasado y el futuro.

Hemos estado usando modelos para investigar cuál diferencia entre los dos patios de juegos causó que solo el de la escuela Woodland se inundara después de una lluvia severa.
Have students turn to a partner to share their ideas, then call on a few to share with the class.

3. Have students reflect on how models have been useful to investigate.

Los patios de juegos han recibido lluvia severa en el pasado. Probablemente la recibirán de nuevo en el futuro. Pero queremos aprender acerca de por qué se inundan ahora, cuando no está lloviendo. Esto puede ayudar a prepararnos para futuras inundaciones.

Al usar nuestros modelos, podemos aprender acerca de inundaciones durante lluvia severa, ¡aunque no esté sucediendo!

4. Read and discuss page 28.

Los contenidos muestran que puedo averiguar más acerca de cómo los científicos usan modelos para investigar el pasado y el futuro en la página 28.

Turn to pages 28 and 29 and read aloud to students. Invite students to share their observations of the photos on these pages. Help students see that the pairs of pictures depict a model and what it represents.

5. Read aloud pages 30 and 31 then discuss the T. rex model. Read both pages aloud, then discuss the questions below.

¿Por qué necesitaban un modelo los científicos?
[Ya no hay dinosaurios T. rex vivos para testear].

Point out that the scientists built a model of an animal that lived in the past in order to answer a question they have now about the T. rex.

¿Qué aprendieron los científicos de sus modelos?
[Los dinosaurios T. rex tenían la mordida más poderosa que cualquier animal que haya existido].

¿De qué manera era igual el modelo a un dinosaurio T. rex real?
[Tenía la misma forma que un cráneo de dinosaurio T. rex y tenía músculos como los hubiera tenido un T. rex real].

¿De qué manera era diferente el modelo a un dinosaurio T. rex real?
[Estaba en una computadora; solo podía morder; no tenía ninguna otra parte del cuerpo].

6. Prompt students to talk in pairs about models in science.
Page through the book with students to remind them of some of the models the class has read about. Then, ask students to reflect on models. Have students discuss their ideas about each question in pairs, then call on a few to share ideas with the class.

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Instructional Suggestion

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