

Week 1: Mystery of the Missing Lunch

Focus: Food Chains

Grade Level: 3-5

Session Length: Four activities of 25-30 minutes each

Driving Questions

- How can we record our observations using our reporter notebook?
- What animal stole the missing lunch from Crystal Cove State Park?
- How can we protect other lunches from being stolen?

During Week 1: Mystery of the Missing Lunch, students are introduced to their roles as nature reporters and then investigate which animal stole the missing lunch from Crystal Cove State Park.

On Day 1, students are introduced to their new role as nature reporters and practice using their reporter notebook by recording observations of a nature object. On Day 2, students are introduced to the breaking news that a lunch was stolen by an animal at Crystal Cove and build a food chain to help them narrow down the suspect list. On Day 3, students gather clues from an eyewitness and a trail camera to support their claim of who is the culprit. On Day 4, students design and build an invention that will protect lunches from being stolen by animals.

Learning Outcomes and Assessments

<i>By the end of this module, students will be able to...</i>	<i>You can assess this using...</i>
1. Observe a nature object and draw their object.	Reporter notebooks on Day 1
2. Build a food chain.	Reporter notebooks on Day 2
3. Support a claim with evidence.	Reporter notebooks on Day 3
4. Design and build an invention to protect lunches from being taken by animals.	Reporter notebooks on Day 4; Student-created lunch bags on Day 4

Weekly Sequence

Section	Description	Length	Format
Day 1	<p>Missing Lunch: Intro to Nature Journaling</p> <p>Students are introduced to their role as a nature reporter as they use their reporter notebook to practice making observations about a nature object.</p>	25-30 minutes	Classroom and outside
Day 2	<p>Missing Lunch: Building a Food Chain</p> <p>Students are introduced to the mystery of the missing lunch and build a food chain using cards of the five animals that are suspected of taking the lunch.</p>	25-30 minutes	Classroom
Day 3	<p>Missing Lunch: Gathering Clues</p> <p>Students gather information from an eyewitness and a trail camera. They use this new information as evidence to support their claim of which suspect took the lunch.</p>	25-30 minutes	Classroom
Day 4	<p>Missing Lunch: Protect the Lunch!</p> <p>Students design an invention that can be used to modify a lunch bag so that lunches will be protected from animals.</p>	25-30 minutes	Classroom

Big Science Idea

A food chain shows how organisms in an ecosystem are related to each other based on their diet. Producers, organisms that make their own food through photosynthesis or chemosynthesis, are at the beginning of a food chain. Bacteria and some other types of microorganisms can break down chemical compounds to make their own food through chemosynthesis, but the most common producers are plants and algae that make their own food through photosynthesis.

Animals that eat plants, algae, and other animals to get the energy they need are called consumers, and there are different types of consumers based on what they eat. Primary consumers are animals that eat only plants and/or algae and are called herbivores. Secondary consumers are animals that eat the primary consumers. If a secondary consumer eats herbivores and plants, it is called an omnivore. If a secondary consumer only eats other animals, it is called a carnivore. A tertiary consumer is an animal that eats other carnivores. Another type of carnivore is a scavenger, which is an animal that eats other animals that have died of natural causes or that were killed by other animals. Scavengers, such as vultures, play an important role in an ecosystem because they remove the dead animals and the bacteria that grow on the dead animal's carcass from an ecosystem, which prevents diseases from spreading to other animals and humans.

One ecosystem has many plants and animals living in it, so it has many food chains. The term food web is used to describe all of the food chains in an ecosystem because they connect and overlap with each other just like the threads of a web.

If you want to learn more...

- *National Geographic: Food Chains and Webs*
- *Free Nature Journaling Teacher Resources*

If you want to share more with students...

- *Animated Video from Scholastic: Food Chains*
- *Animated Video from Scholastic: Food Webs*



Intro to Nature Journaling
(25-30 minutes)

Each teacher will need...	Each student will need...
<ul style="list-style-type: none"> <input type="checkbox"/> Day 1 Slideshow <input type="checkbox"/> Computer, projector, and speakers 	<ul style="list-style-type: none"> <input type="checkbox"/> Reporter notebooks <input type="checkbox"/> Pencil <input type="checkbox"/> Colored pencils

Before you start teaching...

- Open the day’s slideshow and check to make sure that the videos play with sound.
- Gather enough reporter notebooks and pencils so each student will have their own.
- Gather colored pencils.

Instructional Learning Sequence

1. Open the slideshow and play the video on **Slide 2** for the class. Kaitlin will introduce students to the Crystal Cove Conservancy News (CCCN) and their new role as nature reporters for the upcoming weeks.
2. Advance to **Slide 3**, where Kaitlin will introduce the students to the reporter notebooks that they will use over the next four weeks.
3. Move on to **Slide 4**, which has written instructions for how students will use their notebooks:
 - Take notes and record clues
 - Draw pictures
 - Add detail by using descriptive words
 - Record and graph data

Explain to students that over the next four weeks, they will use their reporter notebook to record notes, observations, and drawings to help CCCN solve mysteries and challenges that occur at Crystal Cove State Park as they take on the role of nature reporters. Explain that nature journaling is a great way for nature reporters (and scientists) to record all of the observations they make in the natural world.

4. Move on to *Slide 5*, which shows the information that students should write on the front cover of their reporter notebook:

- Their name
- Their teacher's name
- Summer 2021

Pass out the reporter notebooks to students. Give students time to use crayons, colored pencils, or markers to decorate and personalize their notebooks.

5. Move to *Slide 6* and play the video. Kaitlin will explain that students will use their new reporter notebooks to record their observations of a nature object. They will go outside and choose an object to observe and record their observations.

6. Before going outside, move to *Slide 7* to show students the written instructions for what they will do outside:

- Find a nature object and a quiet spot to sit.
- Write the date, time, and location at the top of the page.
- Draw a picture of the object.
- Record any notes about the color, texture, and smell.
- Make sure students are prepared to share when they are done!

Review the instructions with the students to ensure they understand what they will do once they are out of the classroom. Provide the necessary directions for safety and logistics for how they will find their nature object outside. For example, you may want to make sure they know that they should walk at all times and should always be within eyesight of you and any other adults who may be accompanying them. Give explicit directions for boundaries so they know which areas of the school grounds they are allowed to explore to find and observe their nature object. Also, make sure students understand that they can observe flowers or leaves, but that they shouldn't remove flowers or leaves from plants.

7. Take the students outside so they can find and observe their nature object. Walk around the area to check on progress and answer any questions. Make sure to give students updates on how much time they have left so they can record all of their observations in their notebooks. Once time is up, gather all of the students and return to the classroom.

8. Once you are back in the classroom, move to *Slide 8*, which shows the students the questions they will be answering as they share their observations:

- What was your nature object?
- What did it look like?
- What did you notice about it?

Facilitate a class discussion so students can share their object and observations. You could also have students work in small groups or in pairs to share their observations.



Building a Food Chain
(25-30 minutes)

<i>Each teacher will need...</i>	<i>Each student will need...</i>
<ul style="list-style-type: none"> <input type="checkbox"/> Day 2 Slideshow <input type="checkbox"/> Computer, projector, and speakers 	<ul style="list-style-type: none"> <input type="checkbox"/> Reporter notebooks <input type="checkbox"/> Pencil <input type="checkbox"/> (1) Set of suspect cards <input type="checkbox"/> (1) Pair of scissors <input type="checkbox"/> Colored pencils

Before you start teaching...

- Open the day’s slideshow and check to make sure that the videos play with sound.
- Make copies of the suspect cards so that each student will have their own set.
- Gather enough scissors so each student will have a pair of scissors.
- Gather colored pencils if you choose to have students use them to draw their food chain.

Instructional Learning Sequence

1. Open the slideshow and play the video on *Slide 2*. Kaitlin will interview Erick to share the breaking news that his lunch was stolen by an animal at Crystal Cove State Park. Erick asks the students to build a food chain of the five animals he has seen at the park to see how they are connected with each other and if there is any information that could lead to determining which animal would want to take his lunch.
2. Move on to *Slide 3*, and play the video. Kaitlin will provide information about how students will use the suspect cards to build a food chain and learn about each of the suspected animals and what they eat.
3. On *Slide 4*, which reviews the written instructions for building a food chain:
 - Cut out the suspect cards.
 - Try to build a food chain showing who eats whom.
 - Students draw the food chain they built in their reporter notebook to refer back to later.

Give each student a set of suspect cards and a pair of scissors and review the instructions so they know what to do. Give students time to build a food chain and draw it in their reporter notebook. Make crayons, colored pencils, or markers available if you want students to use them to draw their food chains. Walk around the room to check on progress and answer any questions.

4. When students have finished drawing their food chains, move to *Slide 5*, which has the following questions:
 - Who were the five suspects?
 - What does each suspect eat? How did you put the food chain together?
 - Do you have a suspicion of which suspect might have taken Erick's lunch? Why?

Facilitate a class discussion so that students can share their ideas for each question. Make sure to talk about how they put together the food chain and ensure that the students have created accurate food chains. The correct order from bottom to top is: Orb Weaver Spider, California Gnatcatcher, Western Diamondback Rattlesnake, Coyote, Turkey Vulture.

After the discussion, remind students to make any necessary changes to the food chain in their reporter notebooks based on what they learned during the class discussion.

5. After you have finished the discussion, move to **Slide 6** and play the video. Kaitlin will share that there still isn't enough information to decide who took the lunch and hints that another clue may turn up the next day.

Day 3

Gathering Clues
(25-30 minutes)

Each teacher will need...	Each student will need...
<ul style="list-style-type: none"> <input type="checkbox"/> Day 3 Slideshow <input type="checkbox"/> VoiceThread Slideshow <input type="checkbox"/> Computer, projector, and speakers 	<ul style="list-style-type: none"> <input type="checkbox"/> Reporter notebooks <input type="checkbox"/> Pencil <input type="checkbox"/> Colored pencils (optional) <input type="checkbox"/> Electronic device connected to the internet (optional)

Before you start teaching...

- Open the day's slideshow and check to make sure that the videos play with sound.
- Gather colored pencils for students to use when drawing the suspects.
- Gather enough electronic devices if you will have students go through the VoiceThread slideshow individually.

Instructional Learning Sequence

1. Open the slideshow and play the video on **Slide 2**. Kaitlin informs the class that the lunch box has been found but the meat from the sandwich is missing. Erick then informs the class that an eyewitness saw the animal and how the students will use their reporter notebook to draw a sketch of the suspect using the clues given by the eyewitness.
2. Move on to **Slide 3**. Inform the students that **Slide 4** will have a video describing the suspect in great detail. Tell your students to get out their reporter notebooks and get ready to either take notes or start drawing the suspect based on the video in the next slide.

3. Once the students are ready, move on to *Slide 4* and play the video. This video describes an animal with long legs, puffy tail, pointed nose, triangle ears, with teeth, and a red tongue. You can play the video again if the students need to hear it one more time.
4. Move on to *Slide 5*, which tells the students to draw their suspect. Pass out colored pencils, markers, or crayons to students. Give them time to draw out their suspect. As students finish, ask them who they believe the culprit was. You can tell them to go over their food chain from the day before for the suspect list.
5. Once the class is done drawing their suspect, move on to *Slide 6* and play the video. The video informs the students to go through trail camera footage of the area where the crime took place to determine which animal matches their drawing of the suspect.
6. Advance to *Slide 7*, which has the following instructions for accessing the trail camera footage and for the students to identify the suspect:
 - Go to the *[Voicethread Slideshow](#)*
 - Identify the suspects in the photos and take notes in your reporter notebook.
 - Do any of the suspects match the animal seen at the crime scene?

The trail camera footage is in a VoiceThread slideshow. To use VoiceThread, go to the link provided. Once opened, there will be a combination of video and photos. Play the videos and to move to the next slide by clicking on the arrow in the right hand bottom corner.

At this point, you can either lead the students through the trail camera footage as a whole class or have them individually go through the trail camera footage if you have enough electronic devices for each student. Remind them to have their reporter notebook open to compare their drawings to the photos and videos on VoiceThread.

7. Once you have led the class through the trail camera footage or the students have finished going through it themselves, move on to *Slide 8*. You may use the the following prompts to facilitate a class discussion and encourage the students to share the specific evidence that they used to make their decision on who stole the lunch:
 - Who do you think stole the lunch?
 - What is your evidence to support your claim?

Day 4

Protect the Lunch!
(25-30 minutes)

Each teacher will need...	Each student will need...
<ul style="list-style-type: none"> <input type="checkbox"/> Day 4 Slideshow <input type="checkbox"/> Computer, projector, and speakers 	<ul style="list-style-type: none"> <input type="checkbox"/> Reporter notebooks <input type="checkbox"/> Pencil <input type="checkbox"/> (1) Lunch bag <input type="checkbox"/> Building supplies (e.g. construction paper, popsicle sticks, glue, pipe cleaners, scissors) <input type="checkbox"/> Colored pencils

Before you start teaching...

- Open the day’s slideshow and check to make sure that the videos play with sound.
- Gather building supplies (e.g., lunch bags, construction paper, popsicle sticks, glue, pipe cleaners, scissors, colored pencils) that students will use to modify the lunch bag and set them out so they are easy for students to pick up. Building supplies could be anything you have in your classroom that the students could use to modify their lunch bags so that animals would be discouraged from stealing a lunch. Your craft supplies could be a good source of building supplies for this activity. The supplies could include things like toothpicks, popsicle sticks, tape, pipe cleaners, etc.
- Gather crayons, colored pencils, or markers for students to use to color their lunch bag.

Instructional Learning Sequence

1. When you open the slideshow, advance to **Slide 2** and play the video. Kaitlin updates the class on who the culprit was and congratulates them on their evidence building. Erick then updates the class on how he wants them to modify his lunch bag to protect his lunch from animals who could potentially eat it in the future. Erick gives them directions to design the modification in their reporter notebook. After they have a design written down, they can go to you with the list of supplies they need in order to build their modification.

2. Advance to *Slide 3* which gives the students step by step instructions for the order of events:

- Design or draw out your invention in your reporter notebook.
- Gather the supplies you need.
- Build your protective lunch bag!

Review the order of events with the students then show them or tell them the supplies they will have available for them to use. Remind them they will need to list the supplies they will need before coming up to you and asking for them.

3. Have students begin designing their modification in their reporter notebook. Make sure to give them updates on how much time is remaining as they go through the activity so that they can allocate their time properly to design and build their modifications.

Once they have designed their modification in their reporters notebook, have them come to you and show you the list of the materials they will need to build it. Hand out their materials and paper lunch bag and tell them to start building. As students are building their lunch bags, walk around the room to check on progress and answer any questions.

4. Once everyone or the majority of the class is done (depending on time) building their modifications, move on to *Slide 4*. Have the class share their modifications with other students. There are several ways you can do this. You could have each student share with the entire class, you could have them share within small groups or with a partner, or you could arrange for a gallery walk where half of the students stay with their design to explain it to the other half of the students who walk around to visit each student and then the groups switch and the other half can explain their designs.

5. Once everyone shares their designs, advance to *Slide 5*. Have the students watch the final video which thanks them for solving the Mystery of the Missing Lunch.