What If There Were No Sea Otters?

Investigating Interconnectedness in Ocean Ecosystems

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Grade Level	4th – 5th Grade	**Time Frame**	5-6 class periods
Subject	Science		

Essential Question

How are plants and animals interdependent in an ocean ecosystem?

Summary

In this lesson, students will explore how communities of living things are connected within an ocean ecosystem. They will create an ocean food web and learn how even small changes can impact an entire ecosystem.

Snapshot

Engage Students will use the I Notice, I Wonder strategy as they engage with images of various ocean ecosystems.

Explore Students will explore the interconnectedness of ocean ecosystems by creating a giant food web model.

Explain Students will read and discuss the book *What If There Were No Sea Otters?: A Book About the Ocean Ecosystem* by Suzanne Buckingham Slade.

Extend Students will extend their knowledge by creating their own "What If There Were No..." story for an ocean creature of their choice.

Evaluate Students will show what they have learned by identifying ecosystem connections between student-created stories.

Standards

Oklahoma Academic Standards (5th Grade)

5.LS2.1.2: Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants.
5.LS2.1.5: Organisms can survive only in environments in which their particular needs are met.
5.LS2.2.2: A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life.
5.LS2.2.3: Newly introduced species can damage the balance of an ecosystem.

Attachments

- Creature-Cards-with-photo-citations.docx
- Ocean-Ecosystems.pdf

Materials

- Ocean Ecosystems slides (attached)
- Creature Cards (attached)
- Sidewalk Chalk or string
- *What If There Were No Sea Otters?: A Book About the Ocean Ecosystem* by Suzanne Buckingham Slade
- Anchor chart paper
- Markers
- White paper
- Pencils, crayons, or colored pencils
- Sticky Notes
- Optional: research materials (books, posters, electronic devices)

Engage

Show the Ocean Ecosystems picture slides one at a time. Students should engage with each picture by using the I Notice, I Wonder strategy. This is a great time to uncover student preconceptions and background knowledge. As students share, begin recording their observations and vocabulary on chart paper. This will serve as the beginning of an anchor chart to be used later in the lesson.

Explore

Spread students out in a circle (you will need a large paved area where you can use the sidewalk chalk). Give each student a Creature Card and explain that today they will pretend to be the creature on their card. They will need to "hunt" for food that is listed on the card for their creature - this is their "diet." Note that the Creature Cards also contain plant cards; you may disperse these between students around the circle or assign to students if needed.

Have students take turns introducing their creature and making connections to other creatures or plants in the circle as they "hunt" for food. To make connections visible, use sidewalk chalk to draw lines between students or students and plants. For example, the student holding the Creature Card for "Sea Otter" will draw a chalk line to the student who holds the "Sea Urchin" because that is a part of a sea otter's diet. (Note: If you cannot use sidewalk chalk, an alternative would be to use string or yarn to make connections between students.)

After each student has had a chance to draw connections, discuss the patterns and relationships students notice in their food web.

Questions to Ask During Discussion:

Which creatures have the most lines connecting to them? The least lines? Why do you think this is?

What might happen if I took away the Orca Whale card? What might happen if I took away the Phytoplankton card?

Where would a human fit on this food web?

Where do the plants in our food web get their food?

Explain

Post your anchor chart from the Engage portion of this lesson. Review what you recorded as a class and have students make predictions about the story you are about to read - *What If There Were No Sea Otters?: A Book About the Ocean Ecosystem* by Suzanne Buckingham Slade.

As you read, pause and ask students to make connections to the story. Model this with a “This reminds me of...” statement and encourage students to make connections to the food web they created together. Use the Think-Pair-Share Strategy and curate student connections on your anchor chart.

Teacher's Note

Encourage students to use appropriate vocabulary as they discuss their connections. You can explain and record vocabulary words on the anchor chart as you read and highlight student usage. You can also have students assist in updating the anchor chart, by recording thinking on sticky notes and posting them to the chart.

Extend

Have each student select an ocean creature they would like to investigate. Explain they they will create their own "What If There Were No..." story for the creature they have selected. As a class, decide what your stories should include, using the book *What If There Were No Sea Otters?: A Book About the Ocean Ecosystem* as a model. Students might identify that they need to include their creature's diet, what might happen if a part of that food chain disappeared, and why that might happen (pollution, over-fishing, etc.).

Distribute the white paper, pencils, crayons, colored pencils, or any other tools for students to use in creating their stories. The Creature Cards and anchor chart should be available for them to reference as well as any research tools you may have available (books, electronic devices, etc.)

Adaptations

- Stories can be shorter (a few sentences) or longer (a few pages with illustrations) depending on time limits and student abilities.
- Modify research for students as needed, providing visual materials, examples of food webs, or curated resources.
- Have students work in small groups or with a partner.
- Use an online platform such as Book Creator, Seesaw, Google Slides, or Adobe Spark to create and illustrate stories.
- Allow students to verbally tell their story, using the Creature Cards as picture prompts.

Evaluate

Create a Gallery Walk for students to share their stories. As they circulate, student partner groups will stop, discuss, and use sticky notes to leave feedback in the form of a question or comment for the author. Check for understanding by evaluating student stories and observing discussions during the Gallery Walk. Ask questions to probe for deeper understanding, when needed.

Things to look for as you evaluate student work:

- Does the student use appropriate vocabulary?
- Is there a clear food chain or food web relationship?
- How complex is the food chain or food web? Are there two or more organisms present?
- Does the student show or understand cause-effect relationships in the story?

Resources

- Slade, S. B. (2011) *What If There Were No Sea Otters?: A Book About the Ocean Ecosystem.* Picture Window Books.
- K20 Center. (n.d.). I Notice, I Wonder. Strategies. https://learn.k20center.ou.edu/strategy/180
- K20 Center. (n.d.) Think-Pair-Share. Strategies. https://learn.k20center.ou.edu/strategy/139
- K20 Center. (n.d.). Gallery Walk. Strategies. https://learn.k20center.ou.edu/strategy/118
- Creature card photo citations are included with the card sort.
- Ocean Ecosystem for Kids https://sciencing.com/ocean-ecosystem-kids-12071312.html