

Bay Area Scientists in Schools Presentation Plan

Lesson Name Curious Critters

Presenter(s) Cynthia Cudaback (Ocean and You)

Grade Level 1st

Standards Connection(s):

CA State Standard: grade 1 life science

2. Plants and animals meet their needs in different ways. As a basis for understanding this concept:
 - a. Students know different plants and animals inhabit different kinds of environments and have external features that help them thrive in different kinds of places.

CA State Standard: grade 1 Investigation and Experimentation

4. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:
 - a. Draw pictures that portray some features of the thing being described.
 - b. Record observations and data with pictures, numbers, or written statements.

Next Generation Science Standards:

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.

K-ESS3-1. Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

Common Core Standards:

ELA/Literacy:

W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic. (K-ESS2-2),(K-ESS3-3)

SL.K.5 Add drawings or other visual displays to descriptions as desired to provide additional detail. (K-ESS3-1)

Mathematics:

MP.2 Reason abstractly and quantitatively.

K.CC Counting and Cardinality (K-ESS3-1)

K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. (K-LS1-1)

MP.5 Use appropriate tools strategically.



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FOSS Connections:

Grade 1 Module: *Plants and Animals*
 Investigation 3: *Terrariums*
 Part 3: *Habitat Match*

<i>Science & Engineering Practices</i>	<i>Disciplinary Core Ideas</i>	<i>Crosscutting Concepts</i>
<p>Developing and Using Models Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.</p> <p>Use a model to represent relationships in the natural world. (K-ESS3-1)</p> <p>Analyzing and Interpreting Data Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.</p> <p>Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (K-LS1-1)</p> <p>Obtaining, Evaluating, and Communicating Information Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.</p> <p>Communicate solutions with others in oral and/or written forms using models and/or drawings that provide detail about scientific ideas. (K-ESS3-3)</p>	<p>LS1.C: Organization for Matter and Energy Flow in Organisms</p> <p>All animals need food in order to live and grow. They obtain their food from plants or from other animals.</p> <p>ETS1.B: Developing Possible Solutions</p> <p>Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people. (secondary to K-ESS3-3)</p>	<p>Patterns</p> <p>Patterns in the natural and human designed world can be observed and used as evidence. (K-LS1-1)</p>

Teaser:

Your opportunity to tell teachers and kids what’s going to be fun and interesting about your visit!
 Teachers and kids alike rave about the **Curious Critters** program offered by **Ocean and You**. Here are some of the reasons:

- No need to leave your school! I bring this program right to your classroom.
- Each program starts with my signature story about a sea serpent, a light house and the evolution of life in the ocean. Kids and adults love this story, illustrated with gestures and sounds.
- We explore my vast collection of model marine animals, and sort them taxonomically.
- Each kid gets to hold and draw an animal – optional coloring sheets free them from concern about drawing, and they observe the surface colors and patterns closely.
- Kids love to practice moving like the different animals, so we often end with a “critter parade”.

Learning Objectives: Students will...

- Demonstrate the motions of different marine animals
- Observe, draw & record in writing the features of one marine animal
- Sort marine organisms taxonomically
- Describe some features of mammals
- Explain why starfish & jellyfish are not true fish

Vocabulary/Definitions:

3 – 6 important (new) words

- Vertebrate, invertebrate
- Mammal, bird, reptile, fish
- Taxonomy, evolution

Materials:

What will you bring with you? A big box of model animals for us to explore & sort, & my self – a scientist, educator & storyteller. On request, I can also bring coloring sheets representing all my animals. On request, I can bring a worksheet for students to fill out after our program.

What should students have ready (pencils, paper, scissors)?
Paper, pencils, crayons & best listening skills.

Classroom Set-up:

Student grouping, Power/Water, A/V, Light/Dark, set-up/clean-up time needed

I start out in a circle, telling a story – all students together, on the floor. Then the students sort out my critters into 6 large piles. The ideal setup is 6 large tables. We can do it with 6 distinct areas on the floor, & it’s a bit harder with separate, single-child desks.

Classroom Visit

1. Personal Introduction: _____ Minutes

Who are you? What do you want to share with students and why? How will you connect this with students' interests and experiences?

My name is Cynthia Cudaback, but that's a lot to remember, so please call me "Dr C". Yes I am a real doctor, a doctor of philosophy. That means that I really, really like learning science, so I spent 24 years in school & earned a PhD in oceanography. As well as being a scientist, I am a science educator & a storyteller. I like to combine all three of the things I love, so let me tell you a story.

Learning experience starts with "In the beginning, was the ocean ... (story takes about 5 minutes)"

2. Topic Introduction: _____ Minutes

What questions will you ask to learn from students? Big Idea(s), vocabulary, assessing prior knowledge...

Now this is a science class, & I don't want you to go home & tell your parents that the science lady said sea serpents are real. No one has ever observed a sea serpent, nor found a skeleton. But a lot of the things in my story are real science. Please raise your hand, & tell me what you heard that was real science

- Evolution of life in the ocean
- Formation of land by underwater volcano
- Ships & lighthouses
- The moon affects the tides
- All living things are related

3. Learning Experience(s): _____ Minutes

What will you do, what will kids do? Demonstrations, hands-on activities, images, games, discussion, writing, measuring... activities generally occur in this order, with variants to suit the needs of the particular class. With discussions, & different ages these activities can grow or shrink.

1. Circle time: whole class on the floor (10-15 minutes)

- I tell the story of evolution of life in the ocean, illustrated with gestures. (see above)
- We discuss the story & its implications – everything is related (see above)
- I demonstrate how to sort my critters into different taxonomic groups using signs

2. Critter sorting (15-20 minutes)

- Teacher passes out model animals
- Students sort model animals using signs I provide
- I hover between sorting areas to help

3. Drawing/coloring as a scientific observation skill (optional, 10-20 minutes)

- Coloring sheets distributed by taxonomic group; blank paper option for drawing
- Kids are required to observe their model closely & draw/color it accurately



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- On back, complete “I see”, “I think”, “I wonder” prompts
- If they finish early: add environment to drawing, write down comparisons with other animals

4. Optional additional activities

- Test worksheet: WhosRelated.pdf
- how large are marine animals? (15-20 minutes)
- Whole class: students practice moving like different animals; critter parade (5-10 minutes)

4. Wrap-up: Sharing Experiences _____ Minutes

Putting the pieces together – how will students share learning, interpret experience, build vocabulary? Drawing &/or coloring animals adds to the experience. The WhosRelated worksheet tests their knowledge.

5. Connections & Close: _____ Minutes

What else might kids relate this to from their real-life experience? How can they learn more?
Thanks and good-bye! Clean-up.

Differentiated Instruction:

English Learners: Repeat directions, if necessary, and physically model how to sort different sea critters. Write vocabulary, e.g. animals names, on the board and read words aloud. Vocabulary words can also be visually demonstrated, e.g. using an illustration, and/or redefined in very simplistic terms. Use gestures to act out initial oral story.

Advanced Learners: Have students label the body parts on their diagrams. Students can also think of other other examples of sea animals that can be sorted and classified.

Follow-up Possibilities

ELA Activity:

Students respond to the following journal prompt:

-Write a letter to a friend telling them about what you learned about sea animals.

Mathematics Activity:

-Have students draw various sea animals and find out which ones have lines of symmetry.

Other:

-Have students visit and aquarium and write about their visit.

Total 50 – 60 Minutes



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