Tiny Dancers - Plankton Lesson

Level: Elementary School

Created by: Kelly Drummond, with support from the STEAM Architects in the San Diego Unified School District.

Lesson Objective: Students identify the difference between an autotroph and a heterotroph and think about the body plans and adaptations of small organisms to survive and thrive in the ocean.
Question to Investigate: What are plankton and what do they do?
Key Vocabulary: Plankton, plankter, phytoplankton, zooplankton, autotroph, heterotroph

Stage	Teacher Does	Student Does
Launch/ Engage 15 min.	***Scientists, we're going to watch a video about a new phenomenon for us to explore!*** Show Plankton101 video: https://www.youtube.com/watch?v=yS1Rk4CMpSE Have students turn and talk about what they noticed in the video, then share ideas with the whole group. Engage students in a class discussion: *Facilitator Questions:* ● *What did you see in the video?* ● *How big do you think plankton can be? How small?* ● *What are the two main types of plankton?* *What is different about them? What makes you think that?* ***Today we will investigate: What are plankton and what do they do?***	Students watch plankton video. (4 minutes) Students ask questions and engage in class discussion. (5 minutes)
Explore/ Explain 30 min.	***Phytoplankton photosynthesize, they make their own food so they are called an autotroph.*** Show slide. ***Zooplankton eat other zooplankton and phytoplankton so they are called a heterotroph.*** Show slide. ***We're going to play a game to identify autotrophs and heterotrophs.*** Play game:	Students engage in Heterotroph vs. Autotroph game. (10 minutes)

	● At the front of the classroom place a chair (or other inanimate object), a student volunteer (or teacher), a plant, and a class pet if you have one. Ask the students to identify which is an autotroph (the plant, or anything that produces its own food), and which is a heterotroph (the human or animal or anything that has to eat for energy) ● What features do each have? How are they adapted to survive? For example, a heterotroph has a mouth so it can eat other things and an autotroph doesn't, it has special cells called chloroplasts that help it photosynthesize. How do they move? Do they have to avoid predators, and how might they do it? How is living in the water different from living on the land? ***Thank you for sharing all of your amazing ideas, scientists!*** Show Tiny Worlds video Surviving in the Open Ocean: https://www.youtube.com/embed/wtq7hvjgkh4 Ask students to think a little bit about how they would move if they were a plankter in the ocean if they are very little and they have to stay afloat in the water. Have students turn and talk, then share whole group. *Facilitator Questions:* ● *What would their bodies look like?* ● *How would they eat? How would they avoid predators?*	Students watch Tiny Worlds video Surviving in the Open Ocean. (3 minutes) Students discuss how they would look, eat and deter predators if they were a plankter. (5 minutes)
Explore/ Explain 20 min.	Note: Choose 1 or do both activities. <u>Activity 1: Create a 2D plankter</u>	Students create their own plankter and draw a picture of it. They can create a

Let's get creative! We're going to artistically represent our own 2D plankter.

Hand out drawing materials.

Draw their own plankter. Decide if it is an autotroph and photosynthesizes, or if it's a heterotroph and eats other organisms.

Share Options:

- *Introduce a Mixotroph- an organism that both photosynthesizes and eats other organisms. Ask students to invent, draw, and name a mixotroph.*
- *COLLAGE. Instead of drawing, cut up pieces of paper and ask students to create a body plan by collaging shapes together, and drawing on them.*
- *Students can write a paragraph about their plankter answering questions like: What is it called and why? How does it produce energy?*
- *Students write a poem about their planktonic organism.*

<u>*Activity 2: Plankton Dance Party*</u>

Imagine you live under the sea as a plankter, you drift with the currents and are smaller than an eraser on the end of a pencil. Imagine and invent your own plankter and use your body to pretend you are that plankter.

What kind of plankter are you? Do you photosynthesize, or do you eat other organisms? What shape is your body? What do you use to move around, if you are able to move at all? Do you have a way to sense the world around you?

Move your body like your plankter.

collage instead of or in addition to the drawings. They have an option to write a paragraph or a poem about their organism. (20 minutes)

	Option to have a plankton dance party: Play music and have everyone dance their plankton dance at the same time. *Option to play freeze: When the music stops students freeze in their plankton shape and popcorn around the room sharing how they move as a plankter.*	
Reflect/ Evaluate 15 minutes	***Great work, Scientists and Artists!*** ***Let's share what we figured out about our question to investigate:*** ***What are plankton and what do they do?*** Have students share their plankton drawings, dances, collages, and writings and describe what they created and why, and how their organism survives in its environment.	Students share their plankton drawings, dances, collages, and writings and describe what they created and why, and how their organism survives in its environment. *Expected Student Responses:* • Plankton are tiny organisms that live in water and are unable to swim against the current. • There are phytoplankton and zooplankton. Phytoplankton are autotrophs and create their own energy through photosynthesis, and zooplankton are heterotrophs and eat phytoplankton and other zooplankton to create energy. • Organisms have different bodies and behaviors that allow them to survive.

Extra Resources

- Introductory info on plankton:

https://www.underthescope.udel.edu/plankton-information

- Blog from Tropical Research and Conservation Centre on conducting plankton experiment:

https://tracc.org/blog/2019/3/1/marine-science-a-level-course-plankton-experiment

- Magnify images of plankton:

https://www.underthescope.udel.edu/images

- Plankton Coloring Page with ID:

https://askabiologist.asu.edu/sites/default/files/resources/coloring_pages/pdf/aab_plankton_coloring_page.pdf

- Interactive art installation about plankton and turbulence, with additional take-home craft ideas:

https://www.plankterception.com/