TEACHING TIPS

Critical Questions

- How might artists make art that is designed to teach?
- How might artists make art about nature that is realistic? How might artists make art about nature that is fanciful and exaggerated?
- How might artists experiment with clay to model textures found in nature?

Before Viewing

Introduce the scope of the lesson to students, sharing the key concepts, critical questions, and objectives. Ask for some volunteers to make a list on the board in response to these questions.

- What are all the things you can think of that live in the ocean?
- What do you know about coral and coral reefs?

Responses may show some knowledge of coral reefs. Note: Students may have seen the PBS series *Splash and Bubbles* or the animated series *Octonauts*. Both children's programs feature appealing animated sea creatures and are meant to teach about ocean life. Students may eventually decide to make their coral realistic or to use a kawaii-like style or superhero features (seen in the shows and present in popular culture) to create their own models of coral that will attract interest and attention. Share images of coral and coral reefs (and the other sea life that relies on coral reefs as a home) with students and invite students to take turns describing what they see. Share with students: We are going to learn about coral reefs and make our own model of a coral reef together.

Introduce the video and artist Joan Takayama-Ogawa to students. You might say, We are going to see an artist, Joan Takayama-Ogawa, who creates sculptures of coral from clay.She is worried about climate change caused by things like carbon emissions from car and airplane engines. She makes art about how climate change affects nature. You will see her work with clay. And since she is a teacher as well as an artist, you will see her working with her students.

While watching the video, have students use Worksheet 1: A Treasure in the Sea to fill in answers to questions about the video. Pause the video at different times so students can record their answers. You might allow them to work together in small groups to spot and share the answers to the questions. (Possible discussion responses are listed in the Worksheet 1 teacher's guide.)

After Viewing

Explore the Artwork

Share printed images of Joan Takayama-Ogawa's work with students and take time for students to more closely examine the works (including the titles.) Engage students in a conversation about her work. Some possible questions from students, and responses, might be:

- Why does she have oil spilling out of a teacup? We couldn't drink that.
- Why are there airplanes on the sushi? You're right! We couldn't drink the oil. It would make us sick.
- Do you think maybe that is what she is saying? That climate change could affect what we eat and drink in some way?
- Why is the coral all white instead of colorful?

- Why is it on those pedestals like statues? Remember Joan Takayama-Ogawa said that bleached coral is white. If it stays bleached for too long it dies, like the coral her student brought back from the beach. It looks like bones.
- Could these be like gravestones or memorials to remember the coral?

Return to Worksheet 1 and suggest that students add a colorful drawing of a coral they choose from the images available in the classroom or online.

Learn More About Bleaching
This is a good time to allow students to play NASA's game-like interactive feature (listed in the Resources section.) It allows students to increase ocean temperature and acidity to view what happens to coral during the process of bleaching.

More About Coral
Use Worksheet 2: Corals and Zooxanthellae Are Friends to introduce more facts about coral and coral bleaching. These facts explain that the coral and zooxanthellae rely on each other for survival. After you have read the facts along with the students, hand out images (or have students search for them online) of coral polyps, which look like little plants with tentacles, and zooxanthellae, which look like little round cells. Guide students in drawing and labeling these on the back of Worksheet 2.

Coral Reefs in Danger
With Worksheet 3: Our Coral Reef is Sick! guide students to research online or with handouts why coral reefs are important and valuable. Some facts are listed in the Worksheet 3 teacher's guide. Have the class revisit the process of bleaching. Help students think about ways people can help coral reefs stay healthy. Remind them that they will make a model coral reef together and display it with information about coral and coral reefs. Their model reef with information may help spread the word about the importance of coral reefs and the dangers they face through climate change.

Have students look again at Joan Takayama-Ogawa's work. Remember when we talked about what her work might mean? That we can't really eat polluted things like oil in teacups or sushi with airplanes. And that her bleached coral is like a statue that shows coral is important. She wants people to know this. She wants to get their attention. How would you make a clay coral that would get people's attention? Here you can highlight images of coral reefs and related sea life that range from realistic (photographs and photo-like representations) to cartoon like, as well as Joan Takayama-Ogawa's work which includes exaggeration and puns (in the colorful pieces) and some abstraction (in the coral pieces).

Planning For Art Making
Remind students that they will be creating their own coral to teach others about the effects of climate change on coral reefs. They will need to create a clay model of coral. They will also create infographics to explain the characteristics of coral reefs and the dangers they face. On their worksheet, students can sketch ideas for their own realistic or exaggerated or fanciful coral models.

Assessment

In discussions with the class and with individual students throughout the lesson; by examining the students' worksheets; and by witnessing the students' studio work, it should be evident that the student:

- understands that artists can make artworks that are designed to teach.
- constructed a realistic or fanciful/exaggerated representation of coral that is designed to teach about coral reefs.
- experimented with clay to sculpt and add texture to a coral colony.

Extensions

Craft in America: SCIENCE includes additional artists whose art is based in science: Erik Demaine and Martin Demaine (representing math theories in paper and glass); John Luebtow (a glass artist); Chris Maynard (detailed cutwork made from bird feathers); Karen Nyberg (an astronaut who has quilted in the space station); and Joseph and Sergio Youngblood Lugo (crafting wood fired pottery using traditional methods of the Santa Clara Pueblo, known as cultural science.)