Lesson: Microbe Petri Dish Zoo out of Model Magic

Key Learning Objectives

Young microbiologists will design their own microorganisms or cells and describe what it needs to survive in its environment and what each part of their organism does to help it survive.

21st Century Skills, College & Career Connections

- Microbiologist make and record observations

Safety First

- Establish expectation that microbiologists should not to taste materials or to put anything on or in their bodies.

Supplies:

- Book: Tiny Creatures: The World of Microbes by Nicola Davies
- Petri dishes
- Construction paper
- Scissors
- Glue sticks
- Model Magic primary colors and white
- Pencils
- Popsicle sticks

Key Terms/Techniques:

- Marbling: an effect that
- Line: A path connecting two or more points
- Value: Lightness or darkness of tones or colors
- Texture: The perceived surface quality of a work of art
- Petri Dish: Plastic dish with a lid used to grow (culture) microorganisms. Scientists pour liquid food called media into the plate and let it solidify...just like Jell -O. The organisms grow on and eat the media.

Grade level:

- K-3

Content Standards:

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

References:

Lesson adapted for AASP by C. Fellbaum Dec 2017 from:

- Sax Arts & Crafts Lesson Plans magazine 2017 Edition: "Observe and Invent: Creative Microbiology in Clay"

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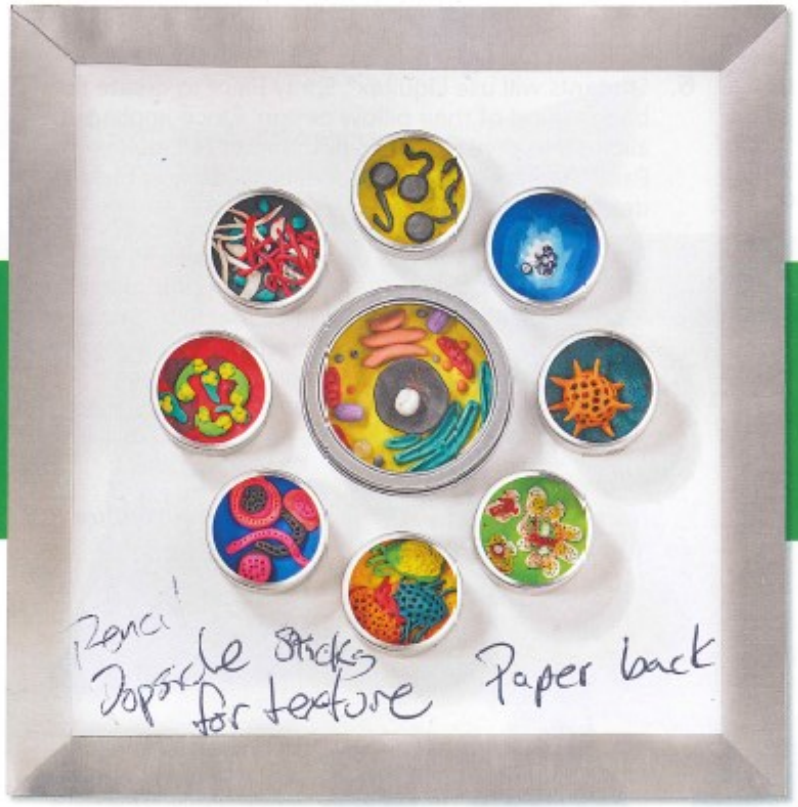

Observe and Invent: Creative Microbiology in Clay

GRADES 4-12

Cross Curricular: Art, Science, Biology

Lesson Plan and Artwork by Kathryn Cahill, Art Consultant

DESCRIPTION

Cell and bacterial sculptures were created with help from Mr. Scott Whetherholt and his science students at Focus Learning Academy Southwest in Columbus, Ohio. This hands-on interdisciplinary project combines the tradition of scientific observation with artistic invention.

Honor the beauty of the microbiology by looking closely at natural materials. Document and model collected visual data using the beautiful colors of Crayola's non-hardening Modeling Clay.

Share your research in a creative way: Invent and sculpt a new molecule or microbiological system. Explain how the invention could change the natural world.

National Core Arts Standards-Visual

Creating
Anchor Standard #1: Generate and conceptualize artistic ideas and work.

Connecting
Anchor Standard #11: Relate artistic ideas and works with societal, cultural and historical context to deepen understanding.

OBJECTIVES

- Observe and document biological specimens under a microscope.
- Learn and understand basic cellular structures and systems.
- Use Crayola® Modeling Clay to sculpt observations and collect data.
- Invent and sculpt new and creative pieces to display.
- Present art and research to a community.

Direction modifications and pro tips:

- We'll use Model Magic instead of modeling clay
- Cut a disk of paper that fits in the bottom of the petri dish
- Write your name on the paper and affix to the inside/bottom of the dish with a glue stick (the name should be visible through the bottom of the dish)
- Discuss patterns of what creatures, including microbes, need to live.
- Tell microbiologists that they will "capture a microbe from the wild" to live in their petri dish. Their job is to tell: where they found it, what it eats, how it eats, how it moves and how it defends itself from being eaten by other creatures.
- Discuss marbling, line, texture and value with the microbiologists (see definitions on the first page)
- Make your microbes out of Model Magic using popsicle sticks and pencils to add texture
- Stick microbes to the paper by applying glue stick directly on the paper (easier) or to the bottom of the microbe (looks nicer) and stick the microbes on the paper.

DIRECTIONS

1. Collect round lids, containers, organizers, palettes or petri dishes to hold observational and creative artwork. Collaborate with a scientist to help your students understand cellular systems and functions. Obtain visual reference materials, including microscopes and slides, photographs, posters and .jpg files.

2. Demonstrate mixing tones, shades and additional clay colors without waste. Explain how complementary colors create browns and how dark colors should be added to lighter colors in small amounts. Knead the clay in your hand to mix unique colors or even choose to disallow mixing clay colors to avoid collecting an excess of muddy colors. Students practice observational clay modeling using Crayola® Modeling Clay and professional sculpting tools. To increase the challenge, demonstrate making a scale sculpture. Emphasize the importance of observation and attention to detail when creating scientific models. Explain that they are collecting visual data that will be used in the future. Artistic elements like line, value and texture give the viewer more accurate data.

3. Students learn the functions of individual parts and their contributions to larger biological systems. Students ask themselves "What if?" and invent new parts and systems from their existing data. Students combine existing pieces or sculpt advanced models to illustrate their unique ideas. Final documents of gained knowledge can be made in very creative ways, including visual storytelling, educational or sales presentations, poster displays, comic-book style "cells" and even clay animation.