Nutrient Cycle

Grade/Grade Band 2-3	**Topic:** The nutrient cycle and the role of decomposers
Brief Lesson Description: Students learn about the role of decomposers in the nutrient cycle and why they're important.	
Performance Expectations: Gain a deeper understanding of important life cycles and the habitats in which they occur.	
Specific Learning Outcomes Students can name the different stages of the nutrient cycle, identify at least 3 decomposers, and articulate what we need them.	
Narrative/Background Information	
Prior Student Knowledge Students should have a basic knowledge of biomes/habitats and some other life cycles (including the water cycle).	
Possible misconceptions: Decomposers are "gross" and should be trampled.	
LESSON PLAN	
SET UP (see materials list below): Load presentation onto the monitor. Have clay, stir sticks, and "placemats" ready to distribute.	
ENGAGE 1: Make personal **introductions**, describing role at Honolulu Botanical Gardens. Talk about the Year of Our Community Forests. Ask students about their connections to trees and plants. Ask if they know anyone who works with plants. Access **background knowledge**: What cycles have they learned about? What habitats have they explored? Introduce topic—Native and Non-Native plants Talk through **World of Rot presentation**, covering definitions, where and how things break down. Discuss how humans use decomposed fossil fuels/fermented food. Talk about underwater decomposers versus land decomposers (versus scavengers?) Have students guess what animals fall in each category. Assistant writes those types of decomposers on the board.	
EXPLORE 1: Demonstrate making a leaf out of clay. Explain that they are to make one green and one brown leaf about 1" long. Hand out green and brown clay. Give students 5 minutes to make leaves.	
ENGAGE 2: Ask students to show their leaves and then place them on the left-hand side of the mat. Then place hands up like branches of a tree (no clay in their hands) so they can focus on the next step. Demonstrate making one decomposer–perhaps a worm. Hand out red and yellow clay.	
EXPLORE 2: Students sculpt 1-2 decomposers each and place them on the bottom part of the mat.	
ENGAGE 3:	

Students hold up their decomposers. Volunteers talk about what they made and why. Leave decomposers on mat and make “tree hands.” Demonstrate “feeding” the decomposers with broken down leaves (from the brown clay leaf). Demonstrate it “going through the decomposer’s digestive system” and coming out as excrement.
EXPAND 1: Students make party hat or lei strand to celebrate their decomposer.
EXPLORE 3: Students break down brown leaf, “feed” it to decomposers, and place “poop” on right side of placemat.
EVALUATE: Place clay in plastic bags and set aside. Discuss key takeaways and restate objectives. Invite students to the gardens for a visit, a class, or a special event.
EXPAND 2: Talk about the role of scavengers and coprovores. Hand out “Hidden Heroes” worksheet.
SOCIAL EMOTIONAL LEARNING CONNECTION
Ask students about their habitat and the roles everyone plays in it. Which important thing does each person bring to the table? What would happen if someone went missing from their ecosystem? How would that effect the whole group?

Materials Required for this Lesson/Activity	
Quantity	**Description**
24	modeling clay in red, brown, green, and yellow
48	stir sticks as sculpting tools (or decomposer credit cards)
1 each	pickles, kimchi, kombucha, yoghurt as props
24	placemats
48	plastic bags

See “placemat” here: Nutrient Cycle2.pdf

A PRODUCTION OF
THE HONOLULU
BOTANICAL GARDENS

water and air
sink into the soil

leaves break
down into the soil

decomposers further
break down leaves

tree uses
nutrients to grow