



Diving into the World of Plecos: Nature's Aquarium Cleaners

Adapted from	https://petsintheclassroom.org/wp-content/uploads/2017/08/Pleco-Plans-PreK-Aquarium.pdf	
Pet: Fish (plecos)	Class: PK-2	

Brief Overview: This hands-on, multi-sensory lesson introduces young learners to plecos, through exploration, storytelling, and creative activities. Children will delve into the biology and ecology of plecos, understanding their unique role in keeping aquariums clean and healthy. The lesson infuses farm-to-ECE concepts by connecting plecos to their natural vegetable diet and encourages healthy eating habits by drawing parallels between humans and fish	Lesson Breakdown Lesson 1: Getting to Know Your Pleco Lesson 2: Pleco Patterns Lesson 3: Eye Spy
Essential Question How do plecos help keep our water friends healthy and happy?	

Subjects <input checked="" type="checkbox"/> Science <input checked="" type="checkbox"/> ELA <input type="checkbox"/> Math <input type="checkbox"/> STEM <input checked="" type="checkbox"/> Art <input type="checkbox"/> Other	Stem Connections Science: Technology: Engineering: Math:
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Performance Expectations/ Standards

NGSS Standards:

K-LS1-1 From Molecules to Organisms: Plants and animals need a variety of living things in a place to survive and thrive.

CCSS ELA Standards:

ELA: SL.K.1.a Engage effectively in a range of conversations with diverse partners about kindergarten topics and experiences.

ELA: L.K.1.d Describe familiar objects and experiences using relevant detail.

I CAN statements

Pre-K:

- describe what plecos look like, using words like bumpy, round, and suckermouth.
- listen to a story about plecos and tell what they eat and how they help other fish.
- Identify different healthy foods that people and fish can eat, like carrots and peas.

Kindergarten:

- explain how plecos use their special mouth to clean the aquarium.
- use descriptive words to tell makes plecos good helpers.
- compare healthy foods for people and fish.

1st and 2nd Grade:

- explain how plecos fit into the aquarium ecosystem and help keep it healthy.
- compare the patterns on different pleco species and create my own unique pleco pattern.
- plan a healthy snack for myself and my fish friend, choosing nutritious options for both.

Materials

- “The Rainbow Fish” by Marcus Pfister
- Hand lenses
- Pictures of pleco foods, aquarium items
- Cardboard, markers, crayons
- Jumbo sunglasses

Teacher Background

Plecos, also known as suckermouth catfish, are fascinating freshwater fish commonly found in aquariums for their unique cleaning abilities and quirky charm. Here's a dive into their captivating world:

Appearance and Adaptations:

Armor Plate Chic: Covered in bony plates instead of scales, plecos resemble miniature armored tanks. These plates offer protection from predators and abrasion as they scamper over rocks and logs.

Suction Sensation: Their signature feature is the suckermouth! This specialized mouth acts like a vacuum, allowing them to cling to surfaces and scrape off algae, their primary food source.

Pattern Power: From stripes and spots to intricate geometric designs, plecos come in a dazzling array of patterns that vary even within species.

Ecology and Symbiosis:

- **Algae Gobblers:** As algae-eating experts, plecos play a vital role in maintaining a healthy aquarium ecosystem. By keeping algae in check, they prevent oxygen depletion and create a clean environment for other fish.
- **Symbiotic Squad:** This cleaning service comes with a bonus! Plecos nibble off parasites from other fish, fostering a mutually beneficial relationship.

Care and Considerations:

- **Size:** Depending on the species, plecos can range from tiny inchlings to giants exceeding two feet! Research their adult size beforehand to ensure your aquarium can accommodate their growth.
- **Treats:** While algae is their staple, offer them occasional treats like cucumber, zucchini, or even blanched lettuce to supplement their diet.
- **Fun:** These nocturnal creatures appreciate hiding spots like caves or driftwood to feel secure during the day.

Lesson 1: Getting to Know Your Pleco

Time	Materials	Activity
20 mins	Hand lenses	Start the lesson by reading, "The Rainbow Fish" by Marcus Pfister. Just like the fish in the book, plecos have special scales (called scutes), too. Ask the children to guess which fish in the tank they thought had special scales. While the pleco's scales don't sparkle, they did earn his fish family the nickname, "armored catfish." Explain the unique features of plecos (suckermouth, scales, etc.) and their connection to their algae-eating behavior. Have the children observe the plecos in the tank using the hand lenses.
10 mins		Talk about the pleco's habitat: how they are bottom feeders who scour the floors in search of algae and other plants to eat. But they also like many of the same vegetables that we do. Discuss how they help keep the tank clean, ensuring the other fish have a clean tank to live in.
15 mins		Ask the children to share their ideas about why the plecos have special scales and different patterns. Have them observe, using the hand lenses, the different patterns. Talk about how plecos live in freshwater rivers with rocks, mud and driftwood. Their scutes help protect them and let them blend into their surroundings.

Lesson 2: Pleco Patterns

Time	Materials	Activity
45 mins	Cardboard, scissors, crayons	Have the students create a set of pleco armor that mimics the way a pleco might look. Cut out scutes from a cardboard box and have the students color them with patterns typical to the markings on a pleco. Some plecos even have different textures on their scutes, so you can add sand to add a new layer to the armor.



<https://petsintheclassroom.org/wp-content/uploads/2017/08/Pleco-Plans-PreK-Aquarium.pdf>

Lesson 3: Eye Spy

Time	Materials	Activity
		<p>Before class: Transform a few pairs of jumbo sunglasses into pleco specs for the students to try on. These glasses will show how the pleco's omega eyes work like our pupils. Cut out paper decals to look like plecós' eyes in different levels of light.</p> <div> </div> <p>Examples:</p> <div> </div> <p>https://petsintheclassroom.org/wp-content/uploads/2017/08/Pleco-Plans-PreK-Aquarium.pdf</p>

Lesson 3: Eye Spy

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15 mins		<p>Explain to the students that plecos like the dark! Explain how plecos are nocturnal and turn out the lights in the classroom.</p> <p>Have the children turn to the child next to them and look at their eyes. When the lights are off, their pupils (little black circles in the eyes) will get bigger and when the lights are on, they get smaller.</p> <p>Plecos have eyes that work in similar ways; have the students try on the pleco specs on for themselves. Explain that when more of the lens could be seen, the darker it was for the plecos' eyes to see.</p>
15 mins		<p>Weave in farm-to-ECE elements by emphasizing the importance of healthy diets for both humans and fish.</p> <p>Compare the food sources of plecos and children, discussing the importance of healthy plants and vegetables for both.</p> <p>Encourage children to identify healthy snacks for themselves and their fish buddies, promoting both human and fish nutrition.</p>
15 mins	Pictures of pleco foods, aquarium items	Play a pleco pickup game: Scatter different items of favorite pleco foods (images of plants/vegetables/algae) and mix them with other aquarium items (rocks/decorations/etc.) and have the children race to pick up the plecos favorites.

Differentiation

For students who need additional support:

- Precut the scutes and draw patterns ahead of time for the students to color in.
- Provide tactile models or puppets of plecos for kinesthetic learners.
- Use simpler vocabulary and shorter sentences for younger children.

For students who need additional challenges:

- Write a short story about a pleco and its adventures in the aquarium.
- Research other algae-eating animals and compare them to plecos.

Assessment				
Criteria	4 Points	3 Points	2 Points	1 Point
Participation:	Actively participates in discussions, asks and answers questions thoughtfully, demonstrates enthusiasm and engagement.	Participates somewhat, but may require prompting or redirection.	Participates minimally, shows limited engagement or understanding .	Does not participate or shows disinterest in the lesson.
Understanding of Plecos:	Clearly understands and explains the role of plecos in the aquarium, uses accurate vocabulary, and provides detailed descriptions in drawings, stories, or answers.	Demonstrates some understanding of plecos and their role, but may have some inaccuracies or limited details.	Shows basic understanding of plecos, but lacks clarity or details in explanations.	Misunderstands the role of plecos or lacks basic knowledge about them.

Healthy Food Connection:	Actively identifies and discusses healthy foods for both humans and fish, makes clear connections between their diets, demonstrates understanding of healthy choices.	Recognizes some healthy foods for humans and fish, but may struggle with connections or provide limited explanations.	Identifies a few healthy foods, but lacks connections between human and fish diets, or explanations are unclear.	Does not identify healthy foods or demonstrate any connection between human and fish diets.
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Extension

- Create a class "pleco tank" mini-environment with decorations and fish pictures.
- Extend the lesson to include music and movement, imitating the swimming and cleaning motions of plecos.try on
- Create pleco lips (using dust mask) to allow the students to model pleco fish suckermouths