

Shark Mystery: The Case of the Mermaid's Purse

Lesson Overview

In this lesson, Keatyn will become a marine biologist to solve the mystery: *Do sharks have eggs?* We will explore the different ways baby sharks enter the world, investigate the unique "Mermaid's Purse," and create a model of a shark egg case.

Materials Needed

- Black or brown construction paper
- Scissors and a stapler (or tape)
- Dried pasta or a small toy shark
- Yarn or string
- A bowl of water
- A regular chicken egg (from the fridge)
- Printable photos of a Great White Shark and a Bamboo Shark (or look them up on a tablet)

Learning Objectives

By the end of this lesson, Keatyn will be able to:

- Identify that some sharks lay eggs while others give birth to live babies.
- Describe the appearance and purpose of a "Mermaid's Purse."
- Explain why shark eggs look different from chicken eggs.

1. Introduction: The Beach Mystery (The Hook)

The Scenario: "Keatyn, imagine you are walking along the beach after a big storm. You look down at the sand and see a strange, leathery, black pouch with curly strings on the corners. It looks like a tiny treasure chest or a 'Mermaid's Purse.' What do you think is inside? Is it gold? Is it seaweed? No—it's a baby shark!"

The Big Question: Do all sharks come from eggs like birds do, or are they born like human babies?

2. Direct Instruction: The Three Shark Secrets (I Do)

Explain the following concepts using 7-year-old friendly language:

- **Secret #1: The Egg Layers (Oviparous):** Some sharks, like the Bamboo Shark or the Swell Shark, lay eggs. But their eggs don't have hard shells like the ones in our fridge! They are tough and leathery to protect the baby from the ocean waves and hungry fish. These are called "Mermaid's Purses."

- **Secret #2: The Live Bearers (Viviparous):** Some sharks, like the Hammerhead, grow their babies inside them, just like humans! The babies are born ready to swim.
- **Secret #3: The "In-Betweeners" (Ovoviviparous):** This is the coolest one! Sharks like the Great White have eggs, but the eggs hatch *inside* the mommy shark's belly. The babies then swim out once they are ready.

Science Check: Compare a chicken egg to a "Mermaid's Purse." A chicken egg is fragile and round. A shark egg is tough, flat, and has "tendrils" (curly strings) to hitch itself onto seaweed so it doesn't drift away!

3. Guided Exploration: Shark Detective (We Do)

Look at pictures or videos of different sharks together. Ask Keatyn to guess how each one is born based on their "Detective Clues":

1. **The Great White:** "I am huge and swim in the deep ocean. I don't want my babies sitting in a stationary egg on the seafloor." (Answer: Live birth/hatch inside).
2. **The Horn Shark:** "I am small and like to hide in the kelp forest. I have a spiral-shaped egg that I wedge into rocks." (Answer: Egg layer).
3. **The Whale Shark:** "I am the biggest fish in the sea! I carry hundreds of eggs inside me until they are ready to pop out and swim." (Answer: Hatch inside).

4. Hands-On Activity: Crafting a Mermaid's Purse (You Do)

Keatyn will now create her own shark egg case to see how it works.

1. **Step 1:** Fold a piece of black construction paper in half. Cut it into a rectangle or a "taco" shape.
2. **Step 2:** Staple or tape two of the sides shut, leaving the top open.
3. **Step 3:** Place a "baby shark" (the pasta or small toy) inside. This represents the embryo.
4. **Step 4:** Seal the top.
5. **Step 5:** Poke holes in the four corners and tie long pieces of yarn through them. These are the "tendrils."
6. **Step 6: The Kelp Test:** Find a chair leg or a plant and help Keatyn tie the yarn to it. This shows how the mother shark anchors the egg so it stays safe in one spot while the baby grows!

5. Conclusion & Recap

Summary: Today we learned that not all sharks are born the same way. Some lay tough, leathery "Mermaid's Purses," and some give birth to live pups!

Review Questions:

- What is a "Mermaid's Purse"?
- Why do shark eggs have curly strings on the ends?
- True or False: A Great White Shark lays eggs on the sand. (False!)

Success Criteria

Keatyn has mastered the lesson if she can:

- Explain that a "Mermaid's Purse" is actually a shark egg.
- Point out that some sharks are born as live babies.
- Identify the yarn/tendrils as the "anchors" for the egg.

Adaptations & Extensions

- **For More Challenge:** Research the "Yolk Sac." Have Keatyn draw a picture of a baby shark inside the egg case and include the "lunch box" (yolk) that feeds the baby while it grows.
- **Sensory Option:** Put the paper "Mermaid's Purse" in a tray of water (if using waterproof material like a plastic folder) to see how the "tendrils" move in the current.
- **Digital Extension:** Watch a 2-minute time-lapse video of a bamboo shark developing inside its clear egg case.