

Grade Level
4-8



Duration
50 minutes

Skills
Comparing,
contrasting,
description,
identification,
observation

Subject Area
Science, language,
arts

Materials
See chart on page 2

LSSS

4-LS1-1

4-LS1-2

DRESS A FISH

FOCUS OVERVIEW

Students will learn about fish anatomy using common objects to associate physical adaptations. Students will discuss physical similarities and differences between fish and other animal species.

BACKGROUND INFORMATION

A fish has many useful adaptations for its watery environment. This activity is a creative method for demonstrating many of the fish's adaptations.

Kingdom: Animalia
Phylum: Chordata
Three Classes: Osteichthyes (Bony fish)
Chondrichthyes (Cartilaginous fish)
Agnatha (Jawless fish)

Facts that will enhance your activity:

- First appeared on earth 550 million years ago.
- Fish breathe by using gills that filter oxygen from the water.
- Most fish are covered with a slimy, mucous covering (slime coat) that defends them from harmful bacteria and allows fish to glide through the water.
- Some fish are covered in thick scales to protect their bodies.
- Fish have fins to aid in swimming, balance, and steering. Common fins found on most fish are dorsal, pectoral, pelvic, anal, and caudal.
- Lateral lines are an adaptation which senses vibrations in the water, and contributes to schooling behaviors.
- The sense of smell is well developed in most species.
- Most fish have a swim bladder which is used for buoyancy.
- Some fish, like the garfish & bowfin, have gills and specialized swim bladders, and can use both, independently, to obtain oxygen from the water or air, respectively.
- The operculum, consisting of a bony plate, covers and protects the gills.
- Fish can change colors to match their environment by use of chromatophores (pigment cells).
- Fish do sleep! Some actually sleep while some enter a "torpid" state of pseudo-sleep.
- The smallest fish is the pygmy goby; the largest is the whale shark.
- Fish have ears, but no external ear structure. Their inner ear bones are located above their brain.
- Seahorses and sharks are types of fish.

LEARNING OBJECTIVES

Students will be able to:

- 1. Choose and name five fish adaptations.
- 2. Describe the function of these five adaptations.

PROCEDURE

Pre-activity discussion ideas:

1. Compare the similarities/differences between cats/fish between birds/fish between snakes/fish. *Cats have four legs and fur, some fish species have whiskers like cats (catfish). Birds have two wings on either side of their body used in conjunction with their tails during flight, fish use their pectoral fins on either side of their body in conjunction with their caudal fin to move through water. Snakes are cold blooded and have scales as fish do. Many fish and reptile species lay eggs. All of these animals have eyes, teeth, breathe oxygen, eat insects and are vertebrates.*
2. What ways do fish protect themselves from predators? *Camouflage, many fish have lighter colored stomachs representing the lighter sky background and darker backs similar to the ground or murky water. Some fish have barbs (catfish) they stick out to prevent a predator from swallowing them. Fish will stiffen their dorsal fins to prevent predators from picking them up. People know this as getting 'finned.' Some fish are faster than their predators and will outswim them. Some predators hide in sand to catch their prey (flounders cover themselves). Other predators use coloration as camouflage to hide next to an underwater structure and ambush their prey (largemouth bass).*
3. Compare the differences between the fish in gulf water habitat and fresh water habitat. *The Gulf is a marine environment and the fish that live in this habitat are adapted to living in salty water. Fish that live in the open ocean have specialized fins and large, long bodies that are built for speed (blue marlin). This adaptation allows them to catch up to their very speedy prey (tuna). These predators can feed on large schools of prey. Fresh water fish normally live in and around grassy areas. Predators wait for prey to move out from the grassy areas to feed.*
4. Fish anatomy jokes:
 - a. Why don't fish play basketball? *They're afraid of the net.*
 - b. Why do fish always know how much they weigh? *They have their own scales.*
 - c. What do you call fish with no eyes? *A Fssshhhhhh.*
 - d. Why are fish so educated? *They swim in schools.*
 - e. What kind of fish chase mice? *Catfish.*

ACTIVITY

1. Select a volunteer with a good sense of humor.
2. Select a student (if capable of writing) to set up a chart and keep track of the prop and adaption.
3. Explain that the volunteer will pose as a fish. Various objects in the trunk will represent the adaptations or the physical structures and functions that enable fish to move and survive.
4. Ask students to discuss anatomical features of a fish. Give them a start point from the top down. As the students come up with different adaptations, place the item one at a time on the "volunteer fish". The props can be put on the volunteer in any order and leading questions can be asked to help the group come up with all the adaptations. Use the previous discussion points to prompt them to come up with the adaptations.



- Alternate activity, lay out all adaptations found in the trunk and ask students how a fish might use each of the props, using their previous discussion points.

PROP	ADAPTATION	FUNCTION
Darker Shades	Eyes	Specialized Eyesight
Strainer	Gills	Filter oxygen out of the water for the fish to breathe
Shin Guards or Pie Plates on String	Scales (some fish have skin instead)	Body Protection
Flippers	Paired Fins	Balance and Locomotion
Masking Tape/Painters Tape	Lateral Line	Detects pressure changes in the water
Large Nose	Smell	Strong Sense in Fish
Float Around the Waist or Arm Floaties	Swim Bladder	Buoyancy
Rain Coat/Poncho	Slime Coating	Protective film that covers a fish's body
Hard Hat	Operculum	Protects the Gills
Audio Ear Plug	Hearing	Internal Ear
Mood Ring	Chromatophore	Pigment cell that contains color, used for camouflage

ASSESSMENT METHOD

- Test students by pointing out each adaptation on the volunteer fish.
- Have students label a fish's adaptations (blank fish picture in teacher reference).
- Writing prompt "Describe a fish's day. Include the fish's adaptations and functions in your description."

EXTENSION

- Have three different live species of fish brought into classroom to discussion similarities/differences. (allow students to bring photos of the fish in place of live fish) Example: catfish/bream (sunfish)/bass. Catfish are bottom feeders whose mouths open low, with barbels (whiskers), bream (sunfish family) have eyes on either side of their head always searching for predators and rather small body shape, some bass have a tooth patch on their tongue/eyes always on top slightly forward of center searching for prey up above and larger body size.

TEACHER REFERENCES

- Diagram resources:
 - <http://www.enchantedlearning.com/subjects/fish/label/labelfish.GIF> -
 - <https://umma.umaine.edu/wp-content/uploads/sites/96/2013/09/BonyFishAnatomy.pdf>
- Pre-test fish quiz <http://www.pbs.org/your-inner-fish/interactives/find-your-inner-fish/>

