

Title: Trout Anatomy		
Overview:	At the conclusion of this lesson students will be able to <ul style="list-style-type: none"> Describe the basic anatomy of a trout 	
Grade:	Upper Elementary	
Standards	NGSS	<ul style="list-style-type: none"> 4-LS1-1 – Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
	Core Idea	From Molecules to Organisms: Structure and Processes
	Practices	<ul style="list-style-type: none"> Obtaining, evaluating, and communicating information
	Cross-Cutting Concepts	<ul style="list-style-type: none"> Structure and function
	Reading, Writing and Social Studies	<ul style="list-style-type: none"> CCSS.ELA/Lit.<u>SL.4-5.1</u> - Engage effectively in a range of collaborative texts, discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade appropriate topics and building on others’ ideas and expressing their own clearly.
	Environmental Literacy	

	Description	Resources
Engage	<ul style="list-style-type: none"> Ask the students whether they know what makes an animal a fish. What characteristics do all fish have? <i>A backbone, live in water and breathe with gills, have fins</i> Why do fish have fins? Ask them if they have ever watched a fish swim. If the aquarium is set up with trout fry, have the students spend some time observing the fish. How do they propel themselves through the water? <i>Most fish use their caudal (tail) fin.</i> Do they have any idea what the other fins are called and what their purpose is? What are the other parts of a fish called and what is their function? Tell them that they are going to find out. 	
Explore	<ul style="list-style-type: none"> Have the students work in pairs. Give each pair a vocabulary sheet and an unlabelled diagram of a trout. Tell them to work together to label the parts of the trout. Remind them to remember the purpose for each part. 	<ul style="list-style-type: none"> Student unlabeled diagram of a trout – one for every two students Student vocabulary sheet - one for every two students Smart board or computer with LCD

		<p>projector. Scan the unlabelled picture of the trout to use during the discussion.</p> <ul style="list-style-type: none"> • If possible, the aquarium with trout fry
Explain	<ul style="list-style-type: none"> • Tell the students to hand back the vocabulary list or put it in their desks so they cannot make use of it during the discussion. • Choose a student to identify one part of the trout. Then choose another student to discuss the function of the part. Continue until all the parts are labeled. • If the students have trouble understanding the concept of the fins serving to stabilize the fish, use the analogy of an airplane: <ul style="list-style-type: none"> ○ The jet engines are like the caudal fin; they make the plane go. ○ The wings are like the dorsal and anal fins; they keep the plane from rolling or spinning around. ○ The flaps on the wings are like the pectoral and pelvic fins; they are used to steer and stop the plane. • If the students have trouble understanding the concept of the lateral line, use the analogy of a cat's whiskers. 	
Extend	<ul style="list-style-type: none"> • Buy a whole fish from the grocery store (or if you know someone who is an angler, ask them if they would bring you a fish) and have the students identify the external parts. Does the fish have the same parts as the trout? <i>In most cases, the fish will not have an adipose fin or a kype.</i> • For older students, you could consider doing a fish dissection, either as a teacher demonstration, or having the students work in groups to do their own dissection. There are a number of websites which have descriptions of fish dissections. Chose one that meets your students' abilities, or use the lesson "Insides and Outsides". • Have students research other fish to compare the function of their fins with those of the trout. Some fish to look at might include flying fish, sea robins, seahorses, moray eels, triggerfish, and pipefish. 	
Evaluate	Evaluation based on accuracy of answers and class participation	

Teacher Background:

Although fish are often very different in terms of coloring and body shape, they all share some basic features. Probably the most obvious feature, and one that characterizes all fish, is the presence of fins. The number, shape and function of the fins may differ from one species of fish to another. For example, the pectoral fins of a flying fish are modified for gliding while the pectoral fins of a sea robin are modified for walking. However, the pectoral fins are always

located in the same approximate position in all fish, and in most cases, are used for braking and maneuvering.

Most fish have other body parts in common – eyes, lateral lines, and the operculum. Trout have something that few other fish have – the kype, or hooked lower jaw, found in mature males and used for fighting.



Trout Anatomy Vocabulary



Adipose fin – the soft fin on the fish’s back closest to the tail. It is called “adipose”, which means “fatty”, because it has no fin rays. It may serve to help with stability and to sense the flow of water over the fish’s back.

Anal fin – the single fin on the fish’s belly closest to the tail. It helps with stability.

Caudal fin – also known as the tail fin, this fin is used mainly for swimming.

Dorsal fin – the fin on the fish’s back closest to the head. It helps keep the fish from rolling over.

Eye – used for finding prey and avoiding predators. The relatively large size indicates the importance of sight for trout. The eye has no eyelid but is covered by a tough membrane for protection. Trout can see color.

Kype – the hooked part of the lower jaw found in spawning males. It is used for fighting with other males.

Lateral line – a sense organ that runs down both sides of the fish from the gills to the tail. It helps the fish sense movement and vibrations in the water.

Operculum – the bony plate that covers the gills; sometimes called the gill cover.

Pectoral fin – the pair of fins on the sides of the fish near the operculum. They help the fish stop and change direction.

Pelvic fin – the pair of fins on the belly of the fish, directly below the pectoral fins. They help the fish stop and change direction, especially up and down.