Know Your Aquarium

Objective:

The student will be able to name and label the parts of an aquarium and also to explain the use of each part. This lesson should be completed prior to the final assembly of the aquarium.

Materials Needed:

- An aquarium in the classroom
- Know Your Aquarium Worksheet (one per student)

Activity:

To help students better understand the habitat that they are about to create for their fish, allow them to reflect for a moment on their own habitats as human beings. Ask the students to name all of the elements that they think are necessary parts of a healthy human habitat. List all of the elements in one column on the board.

Then, in a second column, ask the students if the fish need any of these same elements in order to survive in the aquarium. Go through each element in column one and, if applicable, list the corresponding element in column two.

Using your aquarium and its equipment, show each part to the students and ask them if they can guess the purpose of each part. After they have guessed, identify the part and explain how it is important to the ecosystem within the aquarium.

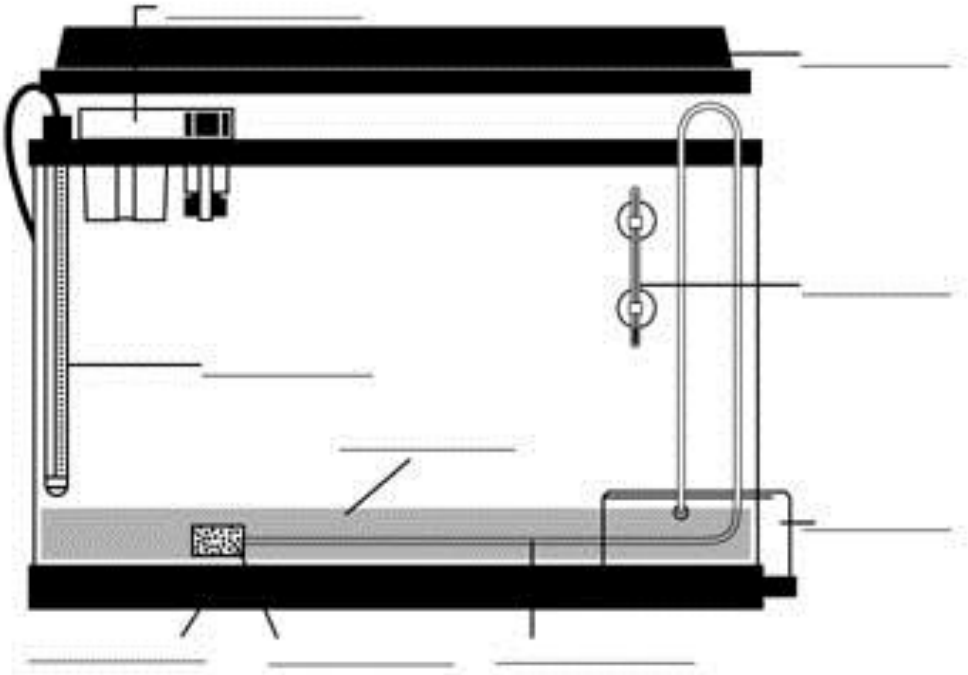
Distribute the Know Your Aquarium Worksheet to each student and ask students to write the name of each aquarium part in the appropriate space and to briefly describe the function of the part. Students may work in pairs or small groups if the teacher feels this would be helpful.

Result:

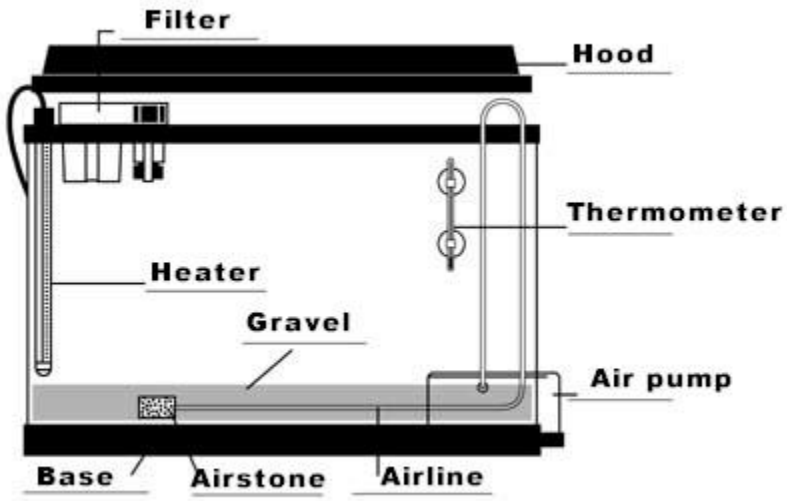
Students will feel more ownership and responsibility for their fish if they understand how each part of the aquarium is necessary for a fish's survival.

Know Your Aquarium

Label the parts of your aquarium.



Know Your Aquarium Answers



Changing the Water in the Aquarium

Objective:

The student will be able to change the water in the aquarium with minimal supervision.

Materials Needed:

- Five-gallon bucket
- A vacuum or suction device
- A calendar
- Materials to make a chart (markers, paper or poster paper)

Activity: Remind students about the types of impurities that must not be allowed to reach dangerous proportions in the aquarium, such as waste, uneaten food, ammonia, other bacteria, etc. Impress upon students that the best way to keep the tank healthy and the fish very happy is to schedule regular water changes for the aquarium.

Have the students make a "Water Change Chart." Using a calendar as a reference, have students list dates on the chart at two week intervals. Tell students that everyone in the class will be trained on the water change procedure so that, over the course of the academic year, everyone will have plenty of opportunities to participate in this important task.

How to Change the Water in the Aquarium:

1. Always unplug all electrical accessories before attempting to remove water from the tank.
2. Do not remove all of the water at one time; this will destroy the ecosystem that students have worked so hard to build up.
3. Using a plastic siphon device begin a pumping action to drain about 20 percent of the existing tank water into the classroom sink or a plastic five-gallon bucket.
4. Empty the bucket, rinse it out and refill with replacement water, which should be the same temperature as the aquarium. Students can use their fingers to test back and forth from the tank to the bucket, adding warm or cool water as necessary, until temperature seems equal.
5. Remove any algae growth from the front side of the glass with a clean sponge (no soap!)
6. Check filters and change if necessary.
7. Add Tetra AquaSafe® to the replacement water.
8. Gently pour the replacement water into the tank.
9. Plug in electrical accessories.

Result:

Students will learn the appropriate water change technique, which is a critical part of being a responsible and successful aquarium owner.

Feeding Your Fish

Objective:

Students will be able to explain proper technique for feeding the fish in their aquarium. They will know *how much* food to feed their fish at each feeding and *how often* to feed them.

Materials Needed:

- A fully operational aquarium
- A can of *TetraMin*® fish food
- A copy of the food pyramid, which can be found at: http://www.choosemyplate.gov/index.html

Activity:

Before discussing the proper technique for fish feeding, engage the students in a brief discussion about the importance of nutrition in their own diets. Make a list on the board of all student responses to questions like:

- Why is it important to eat a balanced diet?
- What kinds of foods make up a healthy, balanced diet?
- Why do people need to eat several times each day?
- What happens when you skip a meal?
- What do you think it means to have good nutrition?

Show students a copy of the nutritional pyramid chart that can be found on the sides of most cereal boxes. Briefly discuss the items on the pyramid. Also point out that the ingredients of the cereal are listed as well as the percentage of daily nutrition requirements.

Pass around the can of *TetraMin*®. Ask students to read the list of ingredients printed on the can and also let them smell the food. Ask them if the fish food ingredients sound like they will be nutritious for the fish.

Select a student to demonstrate how to sprinkle a few flakes of fish food into the aquarium. Show students that the fish should be able to consume all of the sprinkled food within two to three minutes. A student can be the official timer, using a stopwatch or the classroom clock. Tell the class that different students will have the honor of feeding the fish each time and that this is a very important part of being a responsible aquarium owner.

Result:

This lesson will take the guesswork out of the fish feeding process. Students will learn that proper feeding keeps their fish healthy and happy. **Note:** Feeding is a very positive, interactive experience—students will quickly realize that their fish show great excitement (just like people!) when it's time to eat. Stress that it is very important not to overfeed the fish.

Identifying Fish Diseases

Objective:

The student will be able to name at least four different fish diseases and to suggest a cure for each disease. Students also will learn how to help prevent these diseases from infecting their fish.

Materials Needed:

- A first aid kit
- Paper and pencil for each student

Activity:

Ask students to name a variety of sicknesses and diseases that they have had or come in contact with. List these on the board. Allow students to describe the symptoms they observed with some of the diseases. They may have heard their parents talk to a doctor about symptoms such as fever, upset stomach, no energy, loss of appetite, red throat, etc. What illnesses are accompanied by these symptoms?

Ask students to name some of the treatments that were administered for many of the diseases on the list. Did they call a doctor? If so, what did the doctor prescribe? Open the first aid kit and ask students how each item in the kit would be used on a person.

Ask students if they think that fish get sick. Since fish can't talk, how would they be able to let the students know they were sick?

Tell students about the following most common fish diseases and suggested treatments. As you describe each disease, ask students to draw a "Fish Hospital" with pictures of their sick fish based upon the description that is read. Assure the students that you will teach them how to be a good Fish Doctor!

- ICH (pronounced "ick," white spot disease) - a ciliate protozoan; white spots are clearly defined and look like "grains of salt;" affected fish will usually shimmy near the bottom of the tank before spots are apparent. Fish will usually scratch on the gravel. Treatment: make sure water temperature is stable and treat with malachite green medicine.
- External parasites - can be seen on the fish's body. Treatment: use malachite green medicine.
- Fungus - can be white, grey or brown cottony growths that can spread quickly. Treatment: use fungicide.
- Dropsy - protruding scales over most of the body. Fish looks like a pine cone; cause is not known. Treatment: catch fish in net and move it to another tank or elsewhere; can treat with broad spectrum antibiotic but outcome is usually not good.
- Physical damage - lesions, red ulcerated areas, torn fins from rough handling or fighting between fish. Treatment: remove the "fish bully" if necessary; treat with antibacterial medication.

Post a Health Chart near the tank with sections for Symptoms, Behavior and Treatment. Students can note any health problems that the fish might be exhibiting and even catch a disease in its earliest, and most treatable, form.

The best prevention for many fish diseases is good nutrition, proper water quality, stable temperature and scheduled water changes. If medications are needed, they can be obtained from a local pet store.

Result:

Students will be proud of their skill at recognizing common fish diseases and knowing how to provide prompt and effective treatment.

Portions of this page reprinted courtesy of the National Aquarium in Baltimore.

Know the Parts of a Fish

Objective:

The student will be able to identify 5-8 different parts of a fish.

Materials Needed:

- Pencil for each student
- Know the Parts of a Fish Worksheet (one per student)

Activity:

Ask students to think about the functions of different parts of their own bodies. Allow them to answer questions such as:

- What body parts do I use to see, hear, taste, touch and smell?
- What body parts do I use to move around?
- How do I move backward? (Let students demonstrate)
- How do I move side to side? (Let students demonstrate)

Sketch the outline of a tropical fish on the board and, point out the basic parts of the fish and explain the purpose for each part as simply as possible. Encourage students to compare the fish's body parts and purposes to their own.

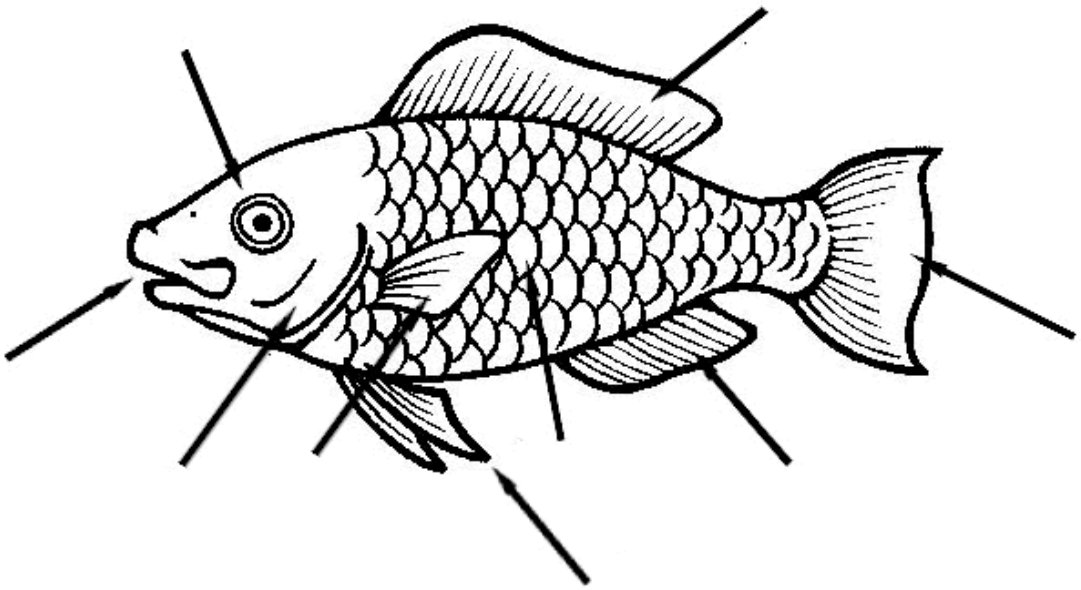
After discussion and answering all questions, distribute the worksheets and give students several minutes to identify the parts of a fish and to briefly describe the function of each part. (Students may work in pairs or groups if the teacher feels this would be helpful.)

Go over the correct answers.

Result:

Students will watch the fish in their aquarium with greater appreciation for the efficiency and adaptability of the fish's body to its underwater world.

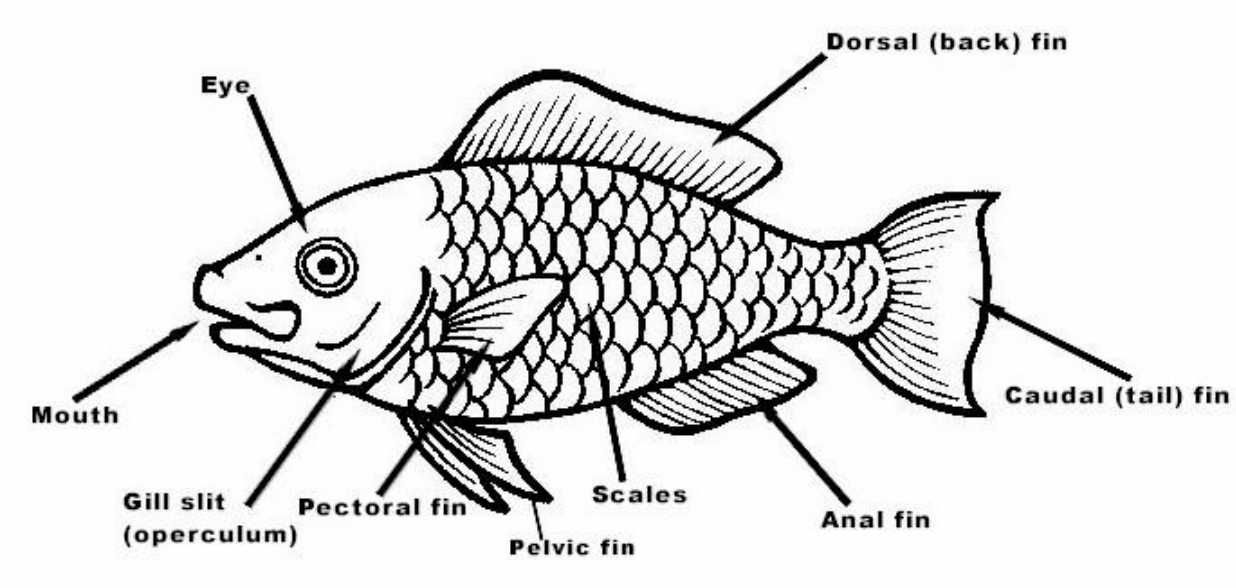
Know the Parts of a Fish Worksheet



Label the parts of the fish using these terms:

mouth	**eye**	**pectoral fin**	**dorsal (back) fin**
pelvic fin	**anal fin**	**gill slit (operculum)**	**caudal (tail) fin**
scales			

Know the Parts of a Fish Answers



Understanding Filtration

Objective:

The student will be able to define filtration, to explain a closed filtration system and to tell why it is an important function in their classroom aquarium. They also will be exposed to the three basic methods of filtration (mechanical, chemical and biological) by watching the classroom aquarium operate.

Materials Needed:

- A fully operational aquarium
- Used coffee filter from a coffee-maker
- Dirty air conditioning filter

Activity:

Before discussing filtration with respect to the aquarium, ask students if they know what the word "filter" means (a device for straining out solid particles, impurities, etc. from a liquid or gas). Ask the students if they can think of any types of filters; list their examples on the board. Show students the coffee filter and the air conditioning filter. Get them to comment on the appearance of both filters. Using these household examples, ask students why filters are important in our lives and how they can make our lives better.

Now ask students to speculate on how a filter might be important to a fish. Ask students what types of impurities might exist in their tank that could be harmful or even fatal to their fish. Write their responses on the board.

Define a Closed Filtration System: a system in which water is recirculated through filters and reused. Also, define an Open Filtration System: a system in which water flows into one end of the tank and flows out the other. Ask students which type of system is used in the tank.

Using the tank as a working illustration, bring students up to the tank in small groups (or demonstrate to the entire class if small groups are not feasible), and show students the filtration device that is attached to the tank. (If students have already completed the Know Your Aquarium lesson plan, they will be familiar with this aquarium part.) Let students watch the water flowing through the filter for a couple of minutes and let them talk about the water as it circulates within the tank. Tell them that the power filter is **mechanically** removing impure particles from the water, **chemically** removing toxins through the activated charcoal and **biologically** breaking down nitrogenous wastes in the nitrogen cycle (cycles will be discussed in another lesson plan).

Also, point out the role that the gravel plays in the biological and mechanical filtration process by helping to trap food particles and wastes.

Result: Since a filter is the most important piece of equipment in any aquarium, this lesson will give students a basic understanding of the filtration process.