

**Shad in the Classroom**  
**Step by Step Setup Instructions:**  
**How to set up your tank!**

**Step 1:** Lay out pieces/parts in front of you; make sure you have everything that you received.

**Step 2:** Put together frame. There should be 4 legs, 2 squares for the top and bottom base, and a flat piece of plywood with a hole in the middle that is placed on the top square. Set the plywood piece to the side.

**Step 3:** Put lower reservoir (tub without pipe) in framework at bottom.

**Step 4:** Pour bucket of bio balls into the lower reservoir.

**Step 5:** Fill the lower reservoir with water. You can use your bio balls bucket or transport water a faster way if you have it. Make sure to fill it almost all of the way, leaving about 9 inches free at the top.

**Step 6:** Lower the pump into the lower reservoir. Make sure to keep the power cord out of the water. Make sure the pump is completely submerged.

**Step 7:** Put the plywood piece on top of the frame.

**Step 8:** Put the upper reservoir (red tub with pipe in it) on top of the piece of plywood on top of the frame. Carefully lower the pipe and valve through the hole in the plywood. Place the fry chamber (lid off) between the egg chamber and the stand pipe. Use the rubber bands on the egg chamber to hold the fry chamber in place. *NOTE: Do not use rubber bands on the 2"-diameter stand pipe – the stand pipe needs to rest on the floor of the upper reservoir. If it does not, fry can inadvertently get sucked into the lower reservoir.* You may need to adjust the rubber bands holding the fry chamber many times to make sure the fry chamber is stable and the 2" stand pipe does not lift from the bottom of the tank. Alternatively, place the fry chamber on a small stack of brick to raise it above the surface of the water. This should allow the fry chamber to remain in place with more stability. Add bricks before the arrival of the eggs and watch water chemistry closely for any changes. Finally, if you can't get the fry chamber to work properly, omit it. Fry can survive in the upper reservoir.

**Step 9:** Fill the upper reservoir with approximately 8 gallons of water (or when the water reaches just below the top of the PVC stand pipe). Add water to the fry chamber as you are filling the upper reservoir (to keep fry chamber from floating). Make sure to open the valve under the upper reservoir *all the way* so water will empty into the lower reservoir.

**Step 10:** With the pump submerged in the lower reservoir, take the other end of the tube and place the hard PVC end in the egg chamber located in the upper reservoir. You may have to bend the tube assembly slightly to get it to fit properly. Make sure the tube is not kinked.

**Step 11:** Double check that steps 1-10 above are completed. Once the water is in both red tubs, the pump is submerged under the water, and the other end of the tube assembly is placed inside the egg chamber, you are ready to turn the system on.

**Step 12:** Plug the pump in to the power cord mounted on the frame. Plug the power strip into the wall (you may need an extension cord). Use the switch on the power strip to turn the pump on. The water should be pumped up through the tubing and into the egg chamber. Once the egg chamber fills with water, the water will pour out of the spout and into the fry chamber. The water in the upper reservoir will flow into the stand pipe and into the bottom tub, thus completing the cycle.

**Step 13:** You can adjust the water flow coming out the egg chamber (and out of the egg chamber's spout) by adjusting the valve on the side of the tube assembly. You want the water coming out of the spout to be a slow but steady trickle. Sometimes students like to mess with this valve (and sometimes the flow will change a little over time), so keep an eye on the flow rate.

**Step 14:** Set up the siphon. Submerge the siphon tube underwater and allow ALL the air to come out. You may need to move it around under the water a bit to get the air out. Plug one end of the tube with your finger, and insert the end with the mesh covering into the fry chamber. Use the binder clip and rubber band to keep the mesh-covered end of the siphon tube a few inches off the bottom of the fry chamber. If your siphon is working properly, the water level in the fry chamber should drop to the same level as the water in the upper reservoir within a few minutes. If your siphon is not working, remove the binder clip, submerge the siphon and try again! Keep trying until the siphon successfully keeps the water in the fry chamber from overflowing.

**Step 15:** Once you feel the tank is working correctly, you will need to add your water treatment chemicals to the bottom reservoir (ChlorAm-X). Follow the instructions on the bottle. **All chemicals are always put in the lower reservoir**, not the upper reservoir.

**Step 16:** Once the system is up and running for a day or two, your students may begin water quality testing. They will need to test water from the upper reservoir because that's the water that is most sensitive to the fry. Follow the instructions on the chemical test kit for each test. You will want to make sure that your tank has reached equilibrium before adding the eggs, so allow plenty of lead time before your eggs will be delivered.

**Step 17:** On the morning of the day you will receive your eggs, add the entire 2 oz. bottle of Dr. Tim's One and Only Bacteria Starter. Follow the directions on the bottle. You don't want to add it to too soon as it needs a food source (waste from the eggs and decaying eggs).

*NOTE: You need to be careful when shutting off your pump and adjusting its flow. If the pump gets shut off or if you adjust your flow too abruptly, it can cause water (and eggs or fry) to be sucked back down the tubing into the lower reservoir. If you need to shut your pump off, first remove the hard plastic piece from the egg chamber and hold it over the upper reservoir. When you need to adjust water flow, turn the valve slowly and watch for any backwash.*