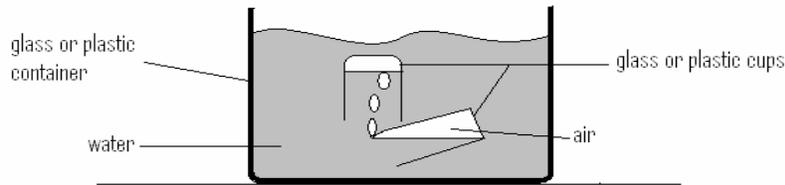


POUR AIR UNDER WATER

A. Question: *Does air take up space under water?*



B. Materials Needed:

1. Two transparent cups, either glass or plastic
2. A large transparent container (for example, a small aquarium)

C: Procedure:

1. Fill the large container about $\frac{3}{4}$ full with water.
2. Hold one cup in each hand upside down, and push them under water.
3. Fill one of the cups with water by holding it at a slanted angle. This will release the air bubbles.
Do not leave any bubbles.
4. Now, position the cup with air still remaining so that it is lower than the other.
5. "Pour" the air from one cup to the other by slowly slanting it in the same way as before. Use the airless cup above it to catch the air bubbles.
6. This "pouring" of air can be repeated from one cup to the other.

D: Anticipated Results:

The students should expect to see the air collected between the cups. The air will be collected and take up space at the top (bottom end) of the cups.

E: Thought Questions for Class Discussion:

1. Before immersing the cups, ask: "What is in the beakers or cups?" (anticipated answer: "nothing")
2. At the time of immersing the inverted cups, ask: "Why doesn't the water enter the cups?"
3. Why do bubbles rise and not sink?
4. Can the cup with water be held partly above the water level without letting the water run out of the cup?

F: Explanation:

Air occupies space and also the space in the cups. At the time the cups were immersed under water, they were filled with air, and this is why the water could not fully enter the cups. By holding one cup slanted, the air bubbles were free to escape and thus the water could take its place. Air is much lighter in weight than water and that is why air bubbles rise and not sink in water. The water-filled cup can be held above the water level without letting the water run out, because the atmospheric pressure is pushing on the water surface.