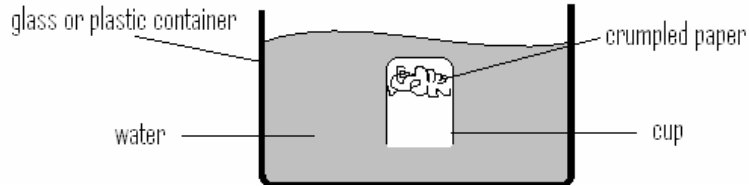


KEEP PAPER DRY UNDER WATER

A. Question: *Is it possible to keep something dry underwater?*



B. Materials Needed:

1. One dry transparent cup, either glass or plastic
2. A larger beaker or transparent plastic container. It should be large enough to fit a person's hand.

C: Procedure:

1. Fill the large container about 2/3 full with water.
2. Crumple a piece of dry paper and squeeze it to the bottom of the transparent cup.
3. Invert the glass. Make sure that the paper is fixed tightly to the bottom of the cup.
4. Immerse the cup completely under water, holding it as vertically as possible.
5. Leave the cup underwater for a couple of seconds. Then take the cup out of the water.
6. Allow the water on the outside of the cup to drip off. Then (with your dry hand) removed the crumpled paper out of the cup.
7. Pass the paper around the classroom, allowing the students to check whether it is wet or dry.

D: Anticipated Results:

The students should expect to feel a dry crumpled ball of paper. When the cup is immersed into the large container full of water, the paper will remain at the top and the air trapped within it will prevent water from getting in.

E: Thought Questions for Class Discussion:

1. Before inserting the crumpled paper into the cup, ask : “What is in the cup?” (anticipated answer: ‘nothing’).
2. Before immersing the cup under water, ask: “What else besides the paper is in the cup?”
3. While immersing the cup: “Why doesn’t the water enter the cup?”
4. Why does the paper have to be crumpled?

F: Explanation:

Air is “space occupying.” The cup is therefore filled with air, no matter if it is being held right side up or upside down. In addition to the crumpled paper, there is also air in the cup and this is why water is unable to enter the cup when it is submerged under water. Therefore, the paper stays completely dry. Applications of this characteristic of air are found when people have to work under water. It is sometimes necessary for people to work underwater in a water-tight walled environment where air is pumped in and around the area. This air allows them to breathe and stay below the surface for long periods of time.